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POPULAR
POULTRY-KEEPING
FOR AMATEURS.

A PRACTICAL AND COMPLETE GUIDE TO BREEDING
AND KEEPING POULTRY FOR EGGS OR FOR
THE TABLE.

By F. A. McKENZIE.

ILLUSTRATED.

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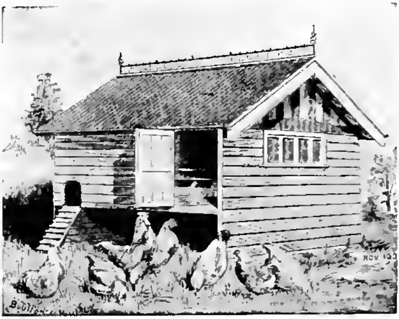

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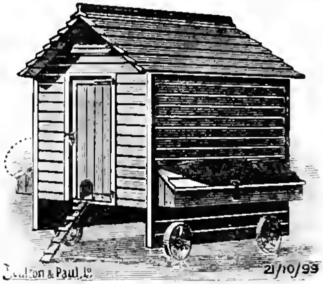

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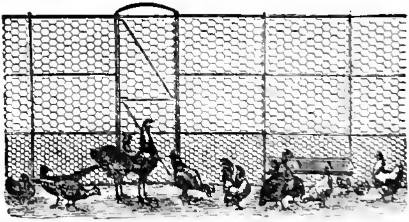

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CONTENTS.

CHAP. PAGE
I.—Introduction 1
II.—Houses and Runs 5
III.—The Selection of a Breed 12
IV.—The Feeding of Poultry 16
V.—Eggs and Hatching 22
VI.—Chicken Rearing 30
VII.—Artificial Incubation 35
VIII.—Breeding 44
IX.—British Breeds of Poultry 48
X.—French Breeds 62
XI.—Spanish and Mediterranean Breeds ... 68
XII.—Asiatic Breeds 72
XIII.—American Breeds 80
XIV.—Bantams 89
XV.—Poultry-Farming 95
XVI.—Table-Poultry 102
XVII.—Ducks 104
XVIII.—Geese, Turkeys, and Guinea Fowls ... 114
XIX.—The Diseases of Poultry 120

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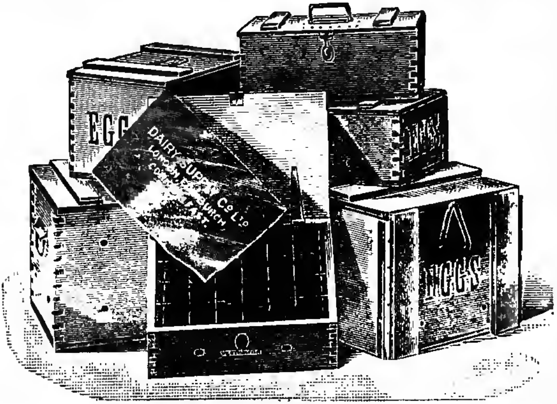

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1	3 0	1 10	1 9	1 8	15	22 0	7 0	6 8	6 3
2	4 12	2 6	2 4	2 3	18	23 0	8 6	8 0	7 9
3	5 12	3 0	2 10	2 9	20	23 8	8 6	9 0	8 6
4	6 8	3 6	3 4	3 2	24	28 0	11 0	10 8	10 0
6	8 12	4 6	4 3	4 0	30	31 0	12 6	12 0	11 3
8	11 12	5 6	5 3	5 0	40	43 0	17 0	18 3	15 2
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POPULAR POULTRY-KEEPING.

CHAPTER I.

INTRODUCTION.

POULTRY-KEEPING has advanced in this country, during the last twenty years, with leaps and bounds. The number of fowls has probably quite doubled, and at the same time more rational methods of management have been adopted. Superior breeds have been introduced, and both the laying powers and the table qualities of the birds themselves have been improved. But much yet remains to be done. Many people, especially those living in the country, still keep on in the old ruts, breeding and managing without any system. Now, if successful and profitable poultry are wanted, they must have attention and proper management, the same as any other stock. Those who think that there is nothing more to be done than to put a few fowls in a shed, and to throw a little corn at them two or three times a day, in order to secure an abundant harvest of eggs, are sadly mistaken. Fowls can only be kept profitably by systematic management, and any one who has not time or is not prepared to go to the trouble to keep them properly, should not keep them at all.

Does it really pay to keep poultry? One friend will tell us that they are nothing but a constant bother, trouble, and expense; while another asserts that they are among the most delightful and profitable pets it is possible to have. Which is right? Both! This may sound paradoxical, but it is nevertheless quite true. Fowls can be made either a great nuisance and trouble, or a source of great pleasure and profit. It all depends on how they are managed. Those who fail in keeping them do so, as a rule, either because their system of treatment is wrong, or because they have got hold of bad birds. Old fowls, fowls of a bad laying strain,

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cold or damp houses, and injudicious feeding, are any of them enough to ruin a poultry-yard. Old fowls and fowls of a bad laying strain will give hardly any eggs; if they are badly housed, or wrongly fed, they will become diseased; and, as many of us know to our cost, where disease comes in, pleasure and profit fly away.

A few years ago it was questioned if poultry could under any circumstances be profitable, and those who kept fowls were often told that every egg they got would cost them sixpence, and every fowl half-a-crown a pound. This is about as true as the statement made by an enthusiastic poultry-keeper, that it is possible to produce eggs for a penny a dozen, and fowls for threepence a pound. The real truth lies somewhere between these extreme statements. Fowls can be kept for from three farthings to three-halfpence a week. The exact amount naturally varies according to the breed of the bird and the price of food. Large birds eat far more, and consequently cost more to keep, than the smaller breeds. The average cost for most hens may be placed at six shillings a year: this includes food, straw, and sundries, but not the cost of the fowl-house; nor does it allow anything for attendance. Now a pen of fair laying birds should lay at least a hundred and twenty eggs each, per year; many will give far more. So if a hen costs six shillings to keep for a year, and during that time lays a hundred-and-twenty eggs, the exact cost of each egg will be three-fifths of a penny, or a little over a halfpenny. Surely no one can call this an extravagant price for a new-laid egg.

Some people who keep fowls have an idea that they are losing money over their stock when all the time the birds are bringing in a profit. It is always desirable that one should know the real state of affairs, and this can be easily done by keeping a simple form of accounts. Here is a case in point: A lady friend of mine was once talking of the unprofitableness of her hens. She was sure she must have lost money over them. They had not commenced laying until January, and now in September the supply of eggs was beginning to run short again. Fortunately this lady had kept a strict account of all income and expenditure connected with her poultry. One day, in order to find out if she had any cause for complaint, her husband balanced her accounts. His investigations showed that the much-abused hens had brought in a clear profit of about four pounds.

Poultry account-books can be bought prepared ready for use, but anyone with a note-book and a ruler can easily prepare his own. The following form will be found the best and simplest for common use:

EXPENDITURE.

Date.	Food Purchased.	Birds Bought.	Various.	Total.
	s. d.	s. d.	s. d.	£ s. d.

Grand Total . . . £

INCOME.

Date.	EGGS.		Birds Sold	Various.	Total.
	No. laid.	Value.			
		s. d.	s. d.	s. d.	£. s. d.

Grand Total . . . £

Many poultry-keepers are greatly troubled by the wandering habits of their hens. If there is a hole in the fencing of the house or run, they are sure to find it out and get through it into the garden. None but those who have tried to keep fowls and to grow plants at the same time know the annoyance of seeing their choicest roots, that have taken months of labour to cultivate, disappear in a single morning, owing to the fowls getting out of their runs. The simple remedy for this is, of course, to have all the holes in the fencing stopped up; but sometimes even this will not succeed. Birds of the lighter breeds will fly over their fences, even when the fences are of a reasonable height. In such a case, the only thing to be done is to cut the row of flight-feathers off one of their wings. This is perfectly painless, and, as the bird is then unequally balanced, it finds itself unable to fly any distance. Where, however, birds are kept for exhibition purposes, this plan will not do; but the wings can be fastened with a wing-lock. A wing-lock consists of a piece of steel chain, a swivel, and a shoulder-piece of leather. The steel chain is placed round the feathers of one wing, the leather bit is placed over the shoulder-joint, and they can be fastened together with any required degree of tightness, rendering it impossible for the bird to fly.

One very common cause of failure in poultry-keeping is lack of cleanliness. The droppings of poultry are often allowed to lie about for weeks at a time, the birds having all the while to inhale the bad smell from them. As a natural result the health of the stock suffers, and the birds become diseased and cease laying. Even when fowls have an unlimited range, it is of great importance that they should be kept clean; but where they are confined in a limited run it is absolutely necessary. The earth of the run must frequently have the excrement gathered off it, and occasionally, in small runs, when the surface-soil becomes foul, a thin crust of earth about four inches thick must be taken off, and fresh soil put in its place. If this is carefully and thoroughly done it will be almost as good as removing the birds to fresh ground. Quicklime scattered over the run helps to cleanse and freshen it. The house must also be kept clean, and have all droppings carefully removed from it. Some writers recommend cleaning the house out every morning, and no doubt where this can be done it is a very good plan. But, unfortunately, many poultry-keepers have not time to do it. In such cases it will be found advisable to use peat-moss litter. Peat-moss should only be used where the floor of the house is absolutely dry, as if there is any damp it is sucked up and retained. Where the floor is damp it can be kept dry by having it asphalted, or laid with concrete. Peat-moss thickly strewn on the floor of the house is both pleasant and warm for the birds to walk on, or to roll about in. It absorbs all the excrement, keeps the atmosphere sweet, and renders it unnecessary to give the house a good cleaning-out more than once or twice a month. This is a great advantage to busy people.

It has been often repeated, though many people still appear ignorant of the fact, that fowl manure is a most valuable fertiliser, either for the farm or for the garden. Its one fault is that it is rather too concentrated, so before using it, it should be mixed with an equal quantity of soot or fine earth.

CHAPTER II.

HOUSES AND RUNS.

DRYNESS, light, warmth, and freedom from draughts—these are the essential requirements of a good fowl-house; and they must be met before it is possible to keep poultry with any reasonable prospect of success. Provided they are attended to, the house may be of any shape or quality that the owner pleases. In the country a dry outhouse or a cellar is often obtainable. This will answer every purpose, but before putting the birds into it, all chinks or crevices that admit draughts must be stopped up. These are generally plentiful about out-houses, and if they are left open, as likely as not they will give the birds colds. Where there is no building suitable, it will be necessary to erect a special structure.

The site of the house must be carefully selected. The best kind of soil is gravel, or some other light, porous substance. The heavier the soil is, and the more it retains the wet, the worse will it be for the fowls that have to stay on it. Where the soil is very heavy it will be well worth while to drain it, for birds are always more liable to disease when penned on damp ground than they otherwise would be. Another thing to be remembered in selecting the site is that birds will not thrive without plenty of sunshine; too often, especially in town yards, a gloomy corner where the sun's rays hardly ever reach is selected for the poultry-run. The natural consequence is that the fowls kept in it are continually looking mopish and having colds. What else can be expected? How would a human being thrive if always kept in a gloomy cellar?

The best site for the house is a level or slightly slanting piece of land, exposed for at least a portion of the day to the sun, and sheltered from the winds. The back should be on the north or east side, if possible, so that the front shall open out on the south or west. There are numerous tradesmen who make a *specialité* of ready-made houses, advertising them at all prices from thirty pounds down to thirty shillings, or even cheaper still. In calculating the cost of these houses it is necessary to add to the makers' charges the cost of cartage from the railway station to the spot where the house is to be placed, and the cost of fixing it together. When one of these houses is purchased it saves a deal of bother, but except in places where wood and labour are at a premium one generally pays more than would have been the case if the work had been done at home.

In purchasing a ready-made article, it is a most mistaken policy to try to get it "very cheap." Manufacturers cannot work miracles. They cannot use two pounds' worth of wood and then sell you the finished article for thirty-five shillings. So those who do buy a very low priced article must not be surprised to find that it is made of thin wood and is neither strong nor warm. Nor is it advisable to purchase a house made of galvanised iron, unless it is lined inside with wood or felt. Metals, as every Board-school boy knows, are good conductors of heat. Consequently, a house made of galvanised iron is stiflingly hot in summer and bitterly cold in winter. Where the iron is lined with wood or felt, these faults are almost entirely removed.

As a rule, the best and cheapest plan is to build one's own hen-house. This is not so difficult a matter as may at first sight appear. An old hogshead, obtainable for two or three shillings, can be converted into a decent house for half-a-dozen birds. It will first have to be cleaned out inside and limewashed. All the crevices in the sides and in one of the ends must be stopped up. The other end will require fitting with a doorway, and then the whole of the outside must be given a coating of tar or paint. One or two perches and a nest will be wanted inside. When the house is ready it should be placed on a few bricks that are so arranged as to lift it off the ground and to keep it steady. If it is

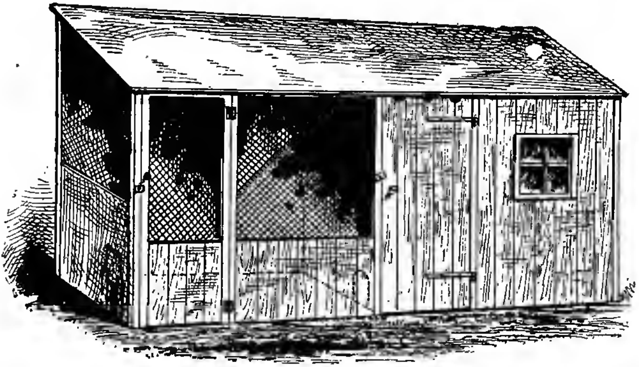

FIG. 1. POULTRY-HOUSE AND RUN.

allowed to rest on the earth it will be damp, and the bottom of it will be liable to rot.

But while such a house will do as a makeshift, it is better, where it is intended to keep fowls for any length of time, to erect a decent-looking, fair-sized structure. A very good form of house, with covered run attached, is shown in Figs. 1, 2, and 3. It can be easily erected with the aid of a few tools. The first thing to be done is to put the framework in position. This must consist of what carpenters call "scantlings," *i.e.*, wood two-and-a-quarter by one-and-a-half inches thick. It costs about a halfpenny a foot. Fig. 2 shows the position of the various parts. First of all, the eight uprights are to be put in their places. Each upright will require to be two feet longer than the height of the house, in order that it may be placed two feet down in the earth. They should also be well tarred, in order to prevent their being rotted by contact with the earth. If their edges, and the edges of every other plank that is fixed in the house, are rubbed with paraffine

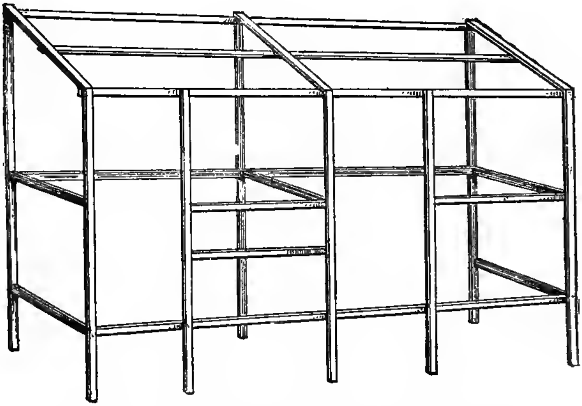

FIG. 2. PLAN OF FRAME-WORK OF POULTRY-HOUSE.

before being put in their places, it will do something towards preventing insects from harbouring in them. When the uprights are firmly fixed the cross-pieces may be fastened on. Great care must be taken to put everything exactly in its right place, and to have it fit properly, or otherwise there will be trouble when the boards are being put on.

After the framework is all in its place, the boarding must be seen to. Match-boarding, six inches wide, can be obtained for a penny a foot; or, if economy has to be very much considered there is a cheaper way of obtaining the boarding. Empty egg-boxes can be bought from the grocers, or glass-boxes from the glaziers and fancy dealers; and if these are taken to pieces they will give a quantity of fair planking at a very small cost. But, at the same time, though new match-boarding is a little more expensive, it is a great deal better, and far less trouble. The covered run will require boarding for two feet from the ground, in front. The remainder of its sides should be fenced in with wire netting, in order that the fowls may be kept in it when required. After the boarding is up, the roof and the sides of the house should be covered with roofing felt. This will make the house nice and snug, and its cost will be well repaid by the improved condition of the fowls. Two little doorways will be required for the fowls to get in and out, the one leading from the house into the covered run, and the other from the covered run into the open. Each of these should have a sliding door attached to it, so that, whenever it is thought desirable, the birds can be shut either in or out of any part.

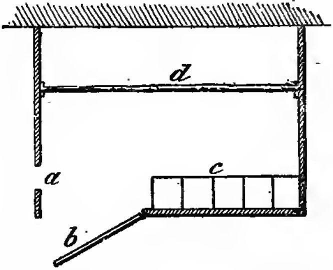

FIG. 3. GROUND PLAN OF POULTRY-HOUSE.
a, Fowls' Entrance; *b*, Door; *c*, Nests; *d*, Perch.

A window of some sort should be placed in every house, for fowls require light as much as human beings. The south side will be found best for the window, as the sun shines most on there. It is not necessary for the window to be movable. It need only be a piece of glass fixed permanently in its place by the aid of a rough framework and putty.

Ventilation must on no account be forgotten. It can be secured by boring half-a-dozen holes, each an inch wide, at the top of the door.

Last of all, the house must have a good coating of tar on the outside. Tar should always be applied hot, as it then goes on more easily and dries far more quickly. It can be heated over a fire in an old tin in a few minutes, but care must be taken that it does not fire. A fresh coating of tar should be given every spring, for it helps to keep the house warm, and acts as a preservative on the wood and felt.

The only fittings that will be required inside the house are nests and a perch. The latter can consist of any old piece of wood, preferably a branch of a tree, about three inches broad and a few feet long. The nests may be made from any odd ends of planking; or an orange-box, obtainable from the greengrocer's for twopence, will answer the purpose exactly, for it is divided into nests all ready for use. The best flooring for the house, especially where peat-moss is used for bedding, is either solid concrete or asphalt; but where the ground is quite dry, earth tightly hammered down will answer the purpose almost as well. It can be easily cleaned, and when it becomes foul a top layer of two or three inches can be taken off, some fresh earth put in place, and there is a new floor for next to nothing.

The sunniest corner of the covered yard should be made into a dust-bath. A dust-bath is simply a piece of land with two or three feet of fine earth or sifted ashes on it. During fine weather the fowls roll themselves about in this, and cleanse themselves from vermin. If a little flowers of sulphur is scattered about the dust-bath it helps to destroy the vermin. Dry fine earth or ashes in a large box protected from rain makes a convenient and tidy bath available in all weathers.

The size of a poultry-run must depend on the number of birds kept and the amount of ground that can be spared for them.

The run can never be too large, and wherever it is possible the birds should be given unlimited space to wander about in. If they have this, they are less expensive to keep and less liable to disease than when kept shut up in a small space; for they pick up a great deal of their food in the shape of insects, seeds, worms, etc., and they live under more natural conditions. But to all except a very few of us, it is impossible to permit our fowls to roam at their own sweet wills. A certain space is allotted to them, and they have to be confined in it.

Poultry can be kept in a very limited area indeed, but the more limited the run, the more liable are its inhabitants to disease, and the more attention will they require. If the run is a good size, say from eighty to a-hundred-and-sixty square feet to each bird, it will be advisable to turf it; but it is impossible to keep small runs green, for the birds soon clear all the grass off. Needless to say, a grass run has many advantages over a gravel one. The grass, however, should never be allowed to grow too long, for it then retains a quantity of moisture during bad weather, and consequently it wets the fowls when they go about it.

Where two or three lots of fowls are kept, and the space is limited, one grass run may be made to do service for all. Each lot will want its own small run besides, and each of these small runs must open out on to the large grass-plot. The first pen of birds can be allowed out on the grass run for two or three hours first thing in the morning. Then they must be got back into their small run while the second lot is let out; and after these have been out for a few hours they must be got back, and the third pen allowed out for the remainder of the day. This can be managed without much trouble, for a lot of birds can easily be made to go back to their smaller run by scattering a little corn in it.

In town yards, where only a very small space can be spared for the poultry, it will be found well to roof-in the whole of the run; this keeps the ground a great deal sweeter, and causes the birds to get on much better.

The best material for fencing-in a fowl-run, is the ordinary two-inch mesh wire netting. Various elaborately ornamental fences are sold, but they are needlessly expensive and answer the purpose no better. The heavy breeds, such as Brahmas and Cochins, will be kept in by a fence five feet high, but the lighter breeds can fly over this. It is often difficult to keep Leghorns and Hamburghs in by a fence eight feet high, especially if there is a rail atop of it. The only thing to do in such a case is to cut the flight-feathers of one wing, or to use a wing-lock, as has been previously recommended.

It is surprising that more people do not beautify their runs by planting shrubs and trees in them. These both look nice and are good for the birds. Almost any kind of standard fruit or rose trees, evergreens, rhododendrons, lilacs, laburnums, and many similar bushes are suitable for this purpose. The fowls will find shelter under them during wet weather, and their presence will take off the bare aspect which so many poultry-runs present, besides helping to keep the earth pure and sweet.

CHAPTER III.

THE SELECTION OF A BREED.

"Which is the best breed of poultry?" This question is continually being asked by those who contemplate keeping fowls. The only answer that can be given to it is that there is no best breed that excels all others in every respect. Some breeds are most suitable for one situation, some for another. Certain varieties excel as table-birds, others take first rank as layers, while others still combine both qualities in a minor degree. But in spite of frequent announcements that such a kind of bird is coming, we have never yet been able to discover a breed that will, under all circumstances, head the list in beauty, table qualities, and laying powers.

Country people often tell us that for useful qualities there is nothing to beat the common barndoor hen. Now, as a matter of fact, there are good and bad birds among both pure breeds and mongrels. No doubt many common hens are excellent layers and table-birds, though it is to be feared that most of them are inferior in both respects; but there are pure breeds that will beat any barndoor hen either for laying or for the quantity or quality of flesh. At the same time these are pure breeds that will not pay for the food they consume. Economic qualities are more the result of strain than of breed, and those who have got hold of a good strain of birds, no matter what their breed may be should be careful before parting with them in favour of any other highly-praised variety; for it is likely that they will get the worst of the exchange.

As a general rule, those who are commencing poultry-keeping will find it better to go in for a pure breed than for barndoor fowls. There are several reasons in favour of this, one of which is, that in purchasing barndoor fowls it is so very uncertain what one will obtain. The birds may be good layers, or they may not; they may lay large eggs or small, brown-shelled or white; they may never want to sit, or they may be always on the cluck. It is all a matter of uncertainty. Now, in purchasing pure breeds, one can at least tell what are the general qualities of the birds, whether they are sitters or not, the kind of egg they lay, and such points. Pure breeds are also more beautiful and more uniform in appearance than mongrels; and though they are somewhat dearer to purchase, any spare stock can be sold for a larger sum than that obtainable for common hens, and, during the breeding season, their eggs will obtain a price above the average for hatching purposes.

During the last few years first crosses have come greatly into favour. A first cross is the progeny of a cock of one pure breed mated to the hens of another breed. The infusion of entirely new blood gives the birds a greater vitality and stamina, and causes a great improvement in their laying qualities. As a rule, the birds obtained by a first cross should not be used for breeding from, as the results of a second cross are generally far less satisfactory. If the first-cross birds are bred from, they should be mated to a cock of an entirely different breed from that of either of their parents. In selecting a breed for a first cross, only such varieties should be mated together as will modify the faults of each other. Take, for instance, the following example: The Cochin is a very hardy bird, but it sits too frequently and is inferior for the table. The Houdan never sits at all, is a good layer, and an excellent table-bird, but it is somewhat lacking in hardiness. Now, by mating these two breeds together we obtain a bird that is a moderate sitter, very hardy, a good layer, and good for the table. Thus the best points of both varieties are incorporated and their faults modified. In crossing, birds with like tendencies should not be mated together. Some people mate Leghorns with Minorcas. This is foolish, for, as both breeds have similar characteristics, no advantages are obtained. On the well-known principle of reversal to primitive type, when two non-sitting varieties are crossed, their progeny are usually sitters. In crossing a large breed with a smaller one, it is advisable to select the male bird from the smaller breed, and the hens from the larger. If the cock of a very large breed is crossed with the hens of a very small one, or *vice versâ*, it is highly probable that most of the eggs will prove unfertile.

Those who wish to go in for a pure breed, and whose object is eggs alone, will naturally keep one of the lighter, non-sitting varieties. The Leghorn stands almost at the head of these. For hardiness, laying powers, and beauty, it is probably unrivalled. To see the beauty of the White Leghorns fully, or, for that matter, to see the beauty of any white breed, they must be kept on a grass lawn in the country. Their graceful bodies, with their snowy-white plumage, yellow legs, and brilliant red combs, shine out in striking contrast to the bright green grass, and make them appear real things of beauty. Brown Leghorns will be found more suitable for town runs than White, as their dark plumage does not so readily show the dirt as that of their fairer sisters. Black Hamburghs are smaller and not so hardy as Leghorns; they lay a very large number of small-sized eggs, when kept in small runs.

Those who live in well-sheltered parts will find Minorcas, Andalusians, and Redcaps to be first-class layers; they are better table-birds than Leghorns, and the two former breeds lay a larger egg, but they will not thrive in cold situations.

Where a non-sitting variety is wanted that is a first-class table-bird and at the same time a fair layer, no better choice can be made than the Houdan.

All these varieties, with the exception of the Redcap, lay a white-shelled egg, and all of them are non-sitters. This, to many people, is a serious drawback. There is an old and prevalent notion that brown-shelled eggs are richer than white, and there can be no doubt that this is to a certain extent—though by no means altogether—true. If brown-shelled eggs are wanted, one of the sitting varieties must be kept. Cochins, Brahmas, and Langshans, lay the darkest-shelled eggs; though Plymouth Rocks and Wyandottes do not come far behind them. It is a strange fact that hens do not always lay eggs of the same tint. The same bird will, at different times, lay eggs of all shades, from a speckly white to chocolate colour. The richest eggs are obtained from Langshans, Cochins, and Redcaps; while the eggs of Spanish and Polish are about the poorest of any. Where a nice egg is wanted, in order to tempt the appetite of a very fastidious invalid, nothing could be found better than that of a Bantam or Hamburgh. Many invalids will eat these dainty little things who would turn in disgust from an ordinary egg.

Where the great object in keeping poultry is to obtain table-fowls, Dorkings will be found the most suitable breed. Houdans follow them very close behind. The other French varieties would also be all very suitable for this purpose if it were not that they are too delicate to allow of their being easily reared in our climate. Cochins and the other great Asiatic breeds, in spite of their immense size, are very bad table-fowls. They carry about on them a great amount of offal, and what flesh they have is largely to be found on their legs, instead of on their breasts. Needless to say, breast-meat is far superior, for edible purposes, to that found on other parts of the body. The Hamburgh, in spite of its small size, is an excellent table-bird. Its diminutive proportions render it unsuitable for the market, but it is remarkably plump, and it carries an amazing amount of breast-meat for its size. For delicate flavour of flesh, the Game stands out unrivalled; and where quickly-maturing birds are wanted for the early markets, a cross between the Game and the Dorking will be found most suitable. Birds of this cross grow very quickly, though they do not attain a very large size. Where quantity of flesh is especially wanted, the Brahma-Dorking cross will be found to meet the need.

Wyandottes, Langshans, Plymouth Rocks, and Orpingtons must take the foremost place as "general utility" fowls; fowls, that is, which will lay a fair quantity of eggs, sit occasionally, and when killed, will render a satisfactory account of themselves under the carver's knife—in short, the kind of birds that the farmer and small householder require. Close behind them come Dominiques and Scotch Greys. All these varieties will be found most suitable for those who only keep one breed, and who wish to rear a few chickens every year.

CHAPTER IV.

THE FEEDING OF POULTRY.

Provided a few necessary conditions are fulfilled, the feeding of poultry is a very simple matter. Fowls are by no means particular about what they eat, unless, indeed, they have been pampered. Notwithstanding this, they should never be given anything but sound, wholesome food. Stale, mite-eaten grain should never be purchased, however cheap it may be. It will always be found more economical to pay a better price and get wholesome food. "Tail corn" and the sweepings of grain shops are not usually to be recommended; in exceptional instances, where the "tail corn" is above the average size, or the sweepings are of extra good quality, they may be worth purchasing; but, as a rule, it is better to have nothing to do with them.

Two meals a day will, generally, be found quite sufficient for adult fowls. The first meal should be given as early in the morning as possible, and may consist of any household scraps, boiled till they are quite soft, and then mixed with sufficient meal to make the whole into a mass that will not cling to the fingers when pressed by the hand. Fowls do not enjoy the wet, "stodgy" masses which so many people give them, nor is much moisture in their food at all good for them. The morning meal should be given quite hot in cold weather, but during summer-time it is better to give it to the birds either lukewarm or cold. Where no household scraps, such as potato-parings, bread-crusts, etc., can be obtained, the morning meal will have to consist entirely of meal. Sharps, pollard, barley-meal, and ground oats are all excellent.

Maize-meal is too fattening for birds in confined runs, and even those fowls which are not shut up in small spaces should not have it given to them as a regular food. The analysis of maize shows its fattening character.

Water	14·50
Flesh-formers	10·00
Fat-formers	69·00
Woody fibre	5·00
Mineral matter (ash)	1·50
Total	100·00

The kind of food used for the morning meal should be frequently changed, for there can be no doubt but that fowls, like other animals, thrive better if their food is varied. Rice and potatoes can be used as a change but neither of them ought to be given frequently as regular foods. The rice should be boiled for twenty minutes, in just sufficient water to swell the grain. The best way to cook potatoes is to boil, or still better to steam them, until they are just done enough; then break them with the hand and give them to the birds. Care should be taken that neither the rice nor the potatoes are done too much. Parsnips, swedes, and similar vegetables make excellent foods, if boiled and then mashed up with a little meal.

The evening meal should be given about half-an-hour or an hour before sunset, and it ought to consist of whole grain. Wheat barley, or buckwheat will be found the best grains for continual use. Where large, heavy oats, weighing about forty pounds to the bushel, can be obtained, they make a very good food; but thin, light oats (light, that is, in weight) should not be used. Dari is a useful grain when the fowls become accustomed to it; but when it is first given to them they usually refuse to eat it, owing to its colour. Where sunflower seeds can be obtained they should be occasionally used, for they are very stimulating grain.

There are many proprietary poultry foods on the market, and I have no doubt but that some of them are very good, but they are also very expensive. Consequently, it will, as a rule, be found inadvisable to use them, except as a "treat," where profit is the object aimed at. They may be sometimes useful for Bantam and chicken rearing, though they are by no means necessary. Fowls can thrive quite as well on good, plain meal.

Some people are very anxious to know the exact quantity of food that they should give their birds. Now it is manifestly impossible to lay down any hard-and-fast rules about this matter. Some breeds of birds can eat double the quantity of food that others require, and even the same bird will consume different amounts of food at different seasons of the year It would be as rational to have the same scale of dietary for all sorts of men, porters and clerks, navvies and barbers, as to feed Leghorns and Langshans, Hamburghs and Cochins, alike. There is only one rule that can be given as to the quantity of food to be allowed, and that is :—Let the birds have just as much food as they will consume with a relish at their meals, and no more Food should never be allowed to lie about the run from one meal-time to another.

Many experiments have been carried on at various times to find out the quantity of food consumed by fowls. The report of the New York Agricultural Station, in 1889, gave an account of one. "Four pens of four pullets each were experimented with, being fed on ground oats water-moistened, raw apples, and Indian corn. Pen 1 contained Light Brahmas, pen 2 Laced Wyandottes, pen 3 Leghorns, and pen 4 Polish. From January 23rd to February 26th the fowls ate in ounces as follows :—

	Indian Corn.	Raw Apples.	Ground Oats.	Total.
Larger breed . .	3·06	2·32	1·27	6·65
Smaller breed . .	1·48	1·57	47	3·52

"The birds gained steadily in each pen. On March 1st, four other pens of four pullets each were placed under experiment. Pen 1 contained two Brahmas and two Wyandottes, pen 2 ditto; pen 3 two Leghorns and two Polands, pen 4 ditto. They were kept in pens 24 feet by 6 feet, and allowed to run in open yards after April 23rd. The table below gives interesting data concerning the experiment, and shows what the birds were fed on and ate.

Pen.	Weight of Fowls, March 1st.	Average Total Food eaten per Day for 6 months.	Each Fowl Averaged for Entire Period.			
			Linseed Meal and Bran.	Apples.	Potatoes.	Wheat.
1	23lb. 10¼oz.	3·60oz.	252·25oz.	83·25 oz.	36·0oz.	291·0oz.
2	24lb. ¾oz.	3·60oz.	172·75oz.	55·5oz.	24·0oz.	220·75oz.
			Corn Meal.			
3	12lb. 2¼oz.	2·57oz.	252·25oz.	83·25oz.	36·0oz.	291·0oz.
4	12lb. 2¼oz.	2·55oz.	172·92oz.	55·5oz.	24·0oz.	217·58oz.

"In egg-production the following results were secured:

Pen.	Ratio of Albuminoids to Carbo-Hydrates in Food.	Number of Eggs.	Total weight.	Average weight of one Egg.
			grammes.	grammes.
1	1:3·7	12·5	688·63	55·01
2	1:7·27	33·75	1878·73	55·67
3	1:3·8	12·25	657·90	53·70
4	1:7·24	41·42	2290·57	52·89

"Pens 1 and 2 averaged 5·24lb. of manure per fowl, during the feeding period, and pens 3 and 4 a trifle less than 2·46."

Many of the most experienced poultry-keepers differ in opinion as to whether it is wise or not to give poultry artificial stimulants, but, as a rule, the judicious use of good heating condiments during cold, wet weather will be found to have a beneficial effect on the egg-basket. The injudicious use of such articles is, however, productive of much harm. If spices, cayenne, chillies, etc., are regularly given, they ruin the fowls' livers, and injure them in other ways. Heating condiments should only be used occasionally, during bad weather, and then only in small quantities. Great care should be taken as to what condiment is used. There are some "poultry spices" sold which cause the eggs to have a bad taste, and injure the fowls in other ways. Those who want to make their own poultry spice will find the following receipt a good one.

Cassia bark	1oz.
Pimento	2oz.
Cayenne pepper	1oz.
Ginger	2oz.
Gentian	1oz
Aniseed	½oz.
Carbonate of iron	2oz.

The above ingredients must be powdered and thoroughly mixed together. The dose is a large teaspoonful to a dozen fowls, and the best way to give it is to mix it with the morning meal.

Where the hens are wanted to lay well, meat in some form should be given to them, especially during the winter months. Liver is often used, but it is far too expensive. Lights answer the same purpose and are not one-quarter the price. Where good horse-flesh can be obtained, it is both better and cheaper than either of the above, but the flesh of diseased horses should not be used. The meat should be well boiled, and then cut in very small pieces, before it is given to the fowls. If it can be passed through a sausage-machine it will be well to do so.

On the Continent nettles are used as stimulants. The nettles must be fresh, and those which have run to seed are preferred. They are chopped very fine and mixed with the usual food. It is said that if this is done, and one-third of the food used is buckwheat, the egg returns will be increased by one-third.

Too much stress cannot be laid on the importance of a good supply of green food for poultry. Nothing tends more to keep them in good health and condition. The lack of it causes the birds to lose tone, and where the yolks of the eggs are light in colour and poor in quality, the reason of it can be usually traced to this. There should always be some fresh green stuff lying where the birds can get at it; but stale, decaying vegetable matter is worse than none at all, for it is a common cause of diarrhœa and similar complaints.

It seems strange that the cheapest, but most essential food should be so often withheld from poultry, yet how often are fowls made to suffer for a lack of pure, fresh water! Fresh water should be given to them at least once a day, in a perfectly clean vessel. The water-vessel should be placed where it cannot upset, and where the rays of the sun cannot reach it. During the winter time, care should be taken that no snow is allowed to fall into the water, for, owing to the amount of latent cold in the snow, the temperature of the water becomes intensely low; and it has been noticed that birds which eat snow, or drink snow water, rapidly lose flesh and condition in consequence.

The best way to give food to fowls is to place it in dishes in their runs. The dishes should be of a good size, so that all the birds can easily get at them, and their sides should not be too low, so as to make it impossible for them to scrape the food out into the run. The advantage of having the food in a dish is that when the fowls have eaten what they want, the remainder can be easily taken away.

CHAPTER V.

EGGS AND HATCHING.

As morning after morning we crack our eggs at the breakfast-table, we hardly realise what a useful article the simple, unpretentious egg is, or to what a variety of uses it can be put. It is probably the commonest and most universal article of food in the world. Throughout all ages, and in almost every country, it has supplied mankind with food at once giving the maximum of nutriment in the minimum of space. It can be cooked in five hundred ways, and is good both as a food and as a medicine. Mr. Simmonds, in a lecture given before the Society of Arts in 1889, summed up the virtues of eggs as medicines as follows: "The white is the most efficacious of remedies for burns, and the oil extractable from the yolk is regarded by the Russians as an almost miraculous salve for cuts, bruises, and scratches. A raw egg, if swallowed in time, will effectually detach a fish-bone fastened in the throat, and the white of two eggs will render the white deadly corrosive sublimate as harmless as a dose of calomel. They strengthen the consumptive, invigorate the feeble, and render the most susceptible all but proof against jaundice in its more malignant phase. They can also be drunk in the shape of that 'egg flip' which sustains the oratorical efforts of a modern statesman."

Even the shells of eggs can be used. These consist, according to the analysis of Vauqelin, almost solely of carbonate of lime. In every thousand parts of egg-shell there are eight-hundred and ninety-six parts of carbonate of lime, fifty-seven parts of phosphate of lime, and forty-seven parts of animal gluten. It is not generally known that the shells of eggs will do just as well as the insides, for clearing coffee. The shells must have been taken from the eggs before they were cooked. The shell of one egg is sufficient to clear a pot of coffee. It must be crushed up fine with the hand, and thrown into the pot. The bits of shell all sink to the bottom, and do not injure the taste of the coffee.

As eggs are plentiful in summer and scarce in winter, it is only natural that many experiments have been made to ascertain the best way of preserving them from summer till winter. There are numerous recipes for egg-preserving, some good, some bad, and some indifferent. To give them all would occupy too much space and serve no useful purpose. The commonest way is that of pickling the eggs in a mixture of twenty-one pounds of quicklime and a gallon of water. The water should be boiling when poured upon the lime, and it should be allowed to stand for twenty-four hours. Then the mixture should be strained, and the clear water poured over the eggs. Eggs thus pickled are very brittle, and require pricking with a pin before they are cooked, otherwise the shells pop open in the boiling water, and allow their contents to escape into the saucepan. Another very common plan is to smear the eggs with grease of some kind and then to keep them in a cool place, with their small ends downwards until they are required. This plan answers very well for small quantities of eggs, and the only objection to it is that the grease used to smear them with often becomes rancid. This may be avoided by using olive oil in which a little beeswax has been dissolved. Salt, an article often used for egg-preserving, is objectionable, as it is very liable to give the eggs a saline taste. Whatever method is used, the one great point that must be attended to is to preserve the eggs as soon after they are laid as is possible—never later than the same day.

As spring comes round, year after year, every poultry keeper has to determine whether or not to place any eggs under sitting hens and to attempt to rear chickens. Chicken-rearing is one of the most interesting branches of poultry-keeping, but it is hardly possible to carry it on with profit in very small yards. Those who have but a very circumscribed space at command will find it more profitable to keep only adult fowls, purchasing young pullets that are just on the point of starting to lay when fresh stock is required; for when chickens are reared in small runs they require more attention, and do not acquire the stamina of birds that have a good grass-plot to run about over.

The best time of year in which to sit hens is from the end of February to the middle of April. The young birds then have time to mature during the summer, and if they are of a good laying strain they will probably start laying during the following September or October, and supply their owner with eggs during the winter months, when eggs are most scarce.

The best breeds of fowls for sitting are Plymouth Rocks, Dorkings, Wyandottes, and Orpingtons; or good motherly barn-door hens. The very heavy varieties, like Brahmas and Cochins, are apt to be clumsy with the eggs, and to break one or two; otherwise they are excellent sitters and mothers, and owing to their great size they can cover a large number of eggs. For fragile eggs no better mothers can be found than Silkies. A hen with Game blood in her is usually a good mother, and very watchful over her brood; but woe to the strange chicken that goes to her for shelter! She will declare war against it, and next time the owner comes round he will probably find the poor little thing at the bottom of the coop, dead, with a great wound on the back of its head.

Sitting hens are a frequent source of trouble to many poultry-keepers. In the middle of the summer, when hatching is over, the birds come on the cluck in great numbers; while in the spring, when sitting hens are most wanted, nearly all the hens refuse to sit. The only way to induce hens to sit is to provide them with comfortable nests in retired situations, each having a number of nest-eggs in them. The old-fashioned methods of putting a hen off the cluck were barbarous in the extreme. One popular way was to dip it in a tub of cold water a few times; another plan was to shut it under a tub, half-starving it all the time. Not only were these plans cruel, but they also were often ineffective, and they frequently caused the death of the hen. Even when they did not do this, they weakened it, and caused it to stop laying for some weeks. Happily there is a simple method by which hens can be put off the cluck without injuring them at all. Have a coop with a barred front and a barred bottom. Put it in a sunny corner of the poultry-yard, and raise it off the ground by placing four bricks under it, one at each corner. Place the bird in this and keep it in for a few days, feeding it well all the time. Being unable to sit down, it will soon go off the cluck, and in a few days it will be as lively as ever. However, I must add that it is not at all wise to continually refuse to allow a hen to sit. It will often be well to allow it to remain on the nest for a week or two, even when there are no eggs placed under it. The rest will do it good.

The selection of eggs for sitting is a most important matter, for on the eggs depend the qualities of the forthcoming brood. It is, to say the least, most foolish to place the first eggs that come to hand under the hen. The matter of selection in breeding is dealt with in the chapter on "Breeding," and therefore it is unnecessary to say anything more about it here.

Only eggs of an ordinary shape, and with a smooth surface, should be used for hatching. Very small and very large eggs should be rejected. From the days of Horace there has been an idea abroad that it is possible to tell the sex of the forthcoming chicken from the shape of the egg, long-shaped eggs producing cocks and round-shaped eggs hens. But this idea, in spite of its antiquity, is incorrect. Another equally inaccurate notion is that if the air-bag at the blunt end of an egg appears to be a little on one side it will produce a hen, while if it is exactly in the centre will produce a cock. As an old writer puts it, "Some doe chuse the egge with the hollow crowne in the side of the toppe for the females, the crowne in the toppe under the shell for the males."

When it is necessary to purchase the eggs for sitting they should be obtained from a vendor of good repute. Some people, thinking they are economical, get the cheapest eggs that are to be had, and when the chickens hatch out are surprised to find them good for nothing. Getting cheap eggs for sitting is altogether false economy. Threepence more paid for each egg would often result in each chicken being worth three shillings more. If very fragile or very valuable eggs are used it will be found advisable to cover them with the egg-protector manufactured by Christy and Co. (Fig. 4), which forms a sort of outer shell for the egg, and prevents it from being crushed.

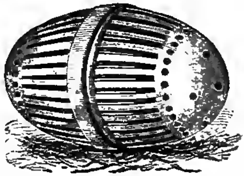

FIG. 4. CHRISTY'S EGG PROTECTOR.

The nest on which the sitting hen is placed should be made in a quiet corner, where no other bird can come to disturb her. Two sitting hens should not be placed where they can get at each other's nests, for, if they have the opportunity one will often scratch eggs out of the nest of the other and annoy it in various other ways. When the earth is dry, it is best to make the nest on the ground; but if it is at all damp, a coop or a box must be used. Scoop the earth out so as to make an excavation of an oval shape, and with the sides about three inches higher than the middle, so that if the eggs are placed in any portion of the nest they will naturally roll towards the centre. Over the earth place a thick, even coating of hay or straw. In cold weather hay will be found somewhat the superior of the two, as it causes the eggs to retain their heat better. Its one fault is that it encourages insects. The number of eggs to be placed under a hen will vary with the size of the hen and the time of the year when she is set. An ordinary sized hen can cover thirteen eggs, except during the cold weather, when it should not be given more than nine or eleven. It is better to place too few than too many eggs under a hen, for one egg too many may cause a whole batch to be spoiled.

"That hen of mine is a very fast sitter. It will not come off its eggs for days together, even to take food." Who has not heard this remark from some inexperienced poultry-keeper? Now, instead of this being a good thing, it is the reverse. Hens *ought* to come off their eggs once every day. They require the few minutes' run and the daily supply of food. Some breeders place food and water near the hen, so that it can eat while sitting on the nest; but this is very unwise. The temporary change from the cramped position is good for the hen, and the exposure to the fresh air benefits the eggs. If a hen is such a close sitter that it will not come off, it should be gently lifted off the nest at a given hour every day. The person who lifts it off must be careful to feel under its wings before removing it from the nest, in order to make sure that no egg is being held there.

A good supply of food, a dish of water, and, if possible, a dust-bath, ought to be placed where the hen can get at them immediately it leaves the nest. The food should be whole barley or wheat. Soft food will not do, as it has not sufficient staying power for a bird that takes only one meal a day. No limit should be placed on quantity. The more the bird can eat, the better for it. The right time for a hen to stay off its eggs is from ten to twenty minutes; and, if it exceeds that time, it should be placed on the nest again. But, sometimes, owing to accidental causes, a hen remains off its eggs for hours at a time. In such a case the eggs should not be thrown away. Embryo chicks have a wonderful amount of vitality in them, and even many hours of exposure often fails to kill them. Let the eggs be placed for a few minutes in warm water, and then let the hen sit on them again. As likely as not they will hatch out, though not till a day or two after the usual time.

Rats are often very troublesome to sitting hens, stealing the eggs from under them. The only remedy in such a case will be to destroy the rats by traps or poison, and to surround the nest, underneath, around, and above, with very fine-mesh wire netting, through which the rats cannot force their way.

Vermin breed very rapidly on a sitting hen, unless some steps are taken to prevent them. Flowers of sulphur should be scattered about the nest, and once a week it should be also rubbed under the wings and into the body of the sitting hen.

About the tenth day the eggs should be examined, and the unfertile ones removed. Have as strong a light as can be obtained, and hold each egg, in turn, between the eye and the light, at the same time arranging the fingers of both hands around the egg in such a way as to act as a screen to keep the light from the eye. Or, better, take a piece of stout cardboard (the cover of an old book answers well), and cut a hole in it the shape of an egg only a little smaller; place one of the eggs to be tested against the hole, and then hold up to the light, as shown in the illustration (Fig. 5). If the egg is perfectly transparent, like a new-laid egg, it is unfertile; but if a small, dark body is seen floating about the centre, it contains a chicken. There are powerful egg-testers sold by which it is possible to discover if the eggs are fertile three or four days after they are placed under the hen. The unfertile eggs should be

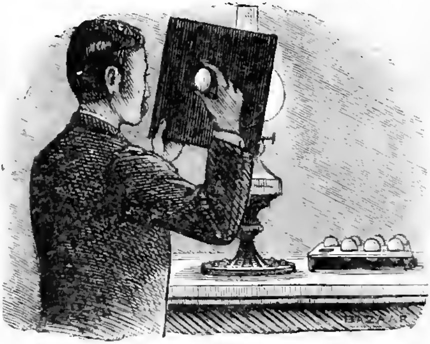

FIG. 5. METHOD OF TESTING FERTILITY OF EGGS.

removed from the nest. They may be boiled hard and kept as food for the forthcoming chicks.

Not unfrequently an egg gets broken in the nest, through the hen treading on it, or some such accident. In this case remove the remains of the egg, wash away any yolk or white that may be sticking about the other eggs, and also remove such of the hay as may have been dirtied. If there is any egg sticking about the hen's breast, it must be washed away as well; otherwise, it may cause one of the uninjured eggs to cling to it, and next time the hen gets off the nest, she will pull the egg off with her, and smash it.

About the twentieth day signs of the forthcoming brood will appear. The best thing now is to leave the hen alone for twenty-four hours. But most people will not do this: they are too eager to see how many little balls of down are coming out, and they go to the nest and have a peep under the hen every hour or two. While such a course is very natural, it is not at all advisable. The poor hen gets disturbed and flurried, and often injures some of the chickens in consequence.

Some breeders recommend a different course. They say it is better to take each chicken away from the hen as it is hatched, until the whole have come out of their shells. As the chickens are taken out they should be placed in a flannel-lined box, by a warm fire, and when the whole brood is hatched it is to be carefully placed under the hen again. The advantage of this plan is that it prevents any possibility of the hen treading on or injuring those chickens that are hatched out, while trying to assist the others from their shells. This is a good plan to adopt when the mother is a very wild or very clumsy hen; but if she is fairly tame there is no need to do so.

Occasionally, especially when the brood is weakly, it will be necessary to assist one or two chickens from their shells. Sometimes a poor thing has not strength to knock away the shell, and so it dies inside; whereas, if a little assistance is rendered, its life might be saved.

If a shell is slightly cracked, and remains in that state for from twelve to twenty-four hours, without the cracks growing any larger or more numerous, then let the breeder carefully take the egg in his hand, and gently remove a piece or two of the shell in the centre of the crack, at the spot where the beak is. After this, put the egg back under the hen again, and in a few hours the chicken will probably force its way out. Sometimes a chicken can can only get half-way out of the shell, owing to some of its down being glued against the skin of the shell. In such a case the down may be carefully cut with a sharp pair of scissors, or it may be softened with warm water. It must be remembered that it is very delicate work to meddle with chickens when they are coming out of the shell; it should never be done except when absolutely necessary and then only as little as possible.

CHAPTER VI.

CHICKEN-REARING.

For twenty-four hours after they are hatched chickens do not require any food. At the end of that time they should have their first meal—something very light and nourishing. Hard-boiled egg, cut very small, mixed with an equal quantity of breadcrumbs or fine oatmeal, and moistened with a little warm milk, is about the best food for them. The mother should be well fed with some plainer food before the chickens are given their meal, or else she will swallow the greater part of the delicacies intended for the little ones.

When the chickens are a day old it will be time to move them from their nest into a coop. It will usually be found most convenient to confine the hen in the coop, while her family can run in to her, or out in a larger run as they please. There are various forms of coops, and the accompanying engravings (Figs. 6, 7, 8) show about the most simple and effective. Whatever form of coop is used, it should not be too small, and it must be water-tight and free from draughts. There should be a loose doorway to fix on the front at night and during bad weather. During the early part of the year it is well to have a small covered run attached to the coop, and there should also be, if possible, a grass-plot for the little things to run about on. It is absolutely essential that the ground be sweet and fresh, for nothing kills young birds more rapidly or more surely than being cooped on dirty soil. For the first few days the chickens will require much the same food as was given to them for their first meal. Then the eggs may be discontinued, and after a few days more their food may be mixed with water instead of milk. A small amount of finely cut-up onion or other green food will do them good, and a daily supply of a few scraps of meat will greatly aid their growth. If the chickens have not a good grass run, they must be daily given a supply of some kind of green meat.

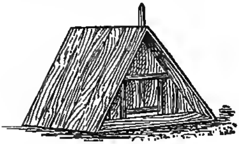
FIG. 6. FIELD COOP.

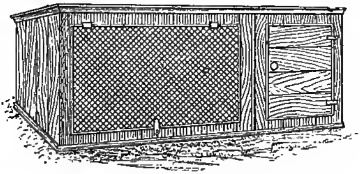
FIG. 7. COOP WITH COVERED RUN ATTACHED.

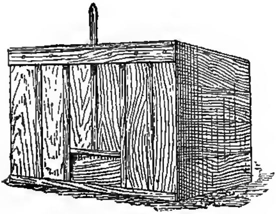
FIG. 8. COOP.

The great secret of success in chicken-rearing is to give the young birds constantly varied diet, and plenty of it. Unlike adult fowls, it is hardly possible to feed them too often; and if good birds are wanted no stint must be placed on the quantity given to them. Half-starved chickens never make good laying hens. Almost any kind of wholesome food will do for them, and after the first two or three days a certain amount of dry grain must be given. The best grain to start with is medium-sized oatmeal; after about a week this may be changed to coarse oatmeal; and when the chicks get a little larger some small whole grain, such as wheat, may be given. It will be found that the birds thrive a great deal better if a large portion of their food is dry grain.

Water must always be placed where the chicks can get at it when they please, but care must be taken to have the water vessel of such a kind that it is impossible for them to get into it. If this precaution is not taken, some of them will inevitably be drowned. There are many water-vessels sold which are so arranged as to have only a small space open for the birds to drink out of. The same result can be obtained in a very simple way. Take a large saucer and a clean flower-pot. The top of the flower-pot must be somewhat smaller than the saucer. Fill the saucer with water, invert the flower-pot on it, and there you have a ring of water for the chickens to drink out of, yet into which they cannot get. This simple form of water-vessel has the advantage of being easily cleaned, which some of the more complicated forms do not possess

A few poultry-keepers have for some years advocated the plan of giving chickens no drinking-water at all, but instead, allowing them a large quantity of moist food. This is a most unnatural and unwise plan. It would be altogether better to go to the other extreme and give the chickens no soft food at all. One well-known poultry-keeper has tried this latter plan, and he thus describes the results: "One year I tried the result of avoiding the use of ground food altogether, and never had a finer lot of chickens. They had a little egg-and-milk with canary seed for their first meals, then bread-and-milk and dari, followed by tail wheat and barley, with sound oats in the husk. I fail to see the use of ignoring the use of the grinding organ known as the gizzard, with which Nature has supplied the chicken." *

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* W. B. Tegetmeier in *The Field.*

The most terrible enemies of young birds are cats and rats. Once let a cat taste the flesh of a chicken, and there will be no way of preventing it from making continuous and repeated raids on the brood except by killing it. A great many chickens could be saved if they were kept in small wired-in runs until they are about three weeks old. After that time many cats will not attack them; but cats that have acquired the appetite for chickens will destroy them even then. How to kill these cats it is difficult to say. Poison is both illegal and dangerous; for domestic animals, or perhaps even human beings are very likely to eat some of it. If traps are carefully laid, they may catch the offenders.

Where rats abound, it is no uncommon thing for them to destroy whole broods of chickens. The coop in which the chickens sleep must be wired in the same way as was advised in the previous chapter for the nest of the sitting hen, and a vigorous attempt must also be made to destroy the rats. Traps will catch some, and if tar is poured down their holes it will help to drive them away.

A writer in *Cornhill* (June, 1890) described a novel plan for trapping rats. "The cunning of rats makes attempts to catch them in traps almost futile, their keen scent recognising the places where a hand has been, and warning them to avoid so dangerous a locality. The use of gloves smeared with aniseed may lull the suspicions of the animal, but traps will never be the means of greatly diminishing its numbers where it has fairly established itself . . . . The best course to take where the extermination of a colony of rats becomes a necessity, is to make them help to destroy one another in the following manner. A number of tubs, proportionate to the number of rats in the place from which it is desired to rid them, should be placed about, the middle of each occupied by a brick standing on end. The bottom of these tubs should be covered with water to such a depth that about an inch of brick projects above it. The top of the tub should be covered with stout brown paper, upon which a dainty meal of bacon-rind and other scraps dear to the rat palate figures—a sloping board giving the rodents facilities for partaking of it. The feast should be renewed for several nights, so that all the rats in the neighbourhood may get to know of the good food which is placed within such easy reach. When it is judged that this policy has been pursued long enough, the centre of the brown paper should be cut in such a manner that any rat venturing on it will be precipitated into the cold water below. It might be thought that the result of this would be the capture of a rat or at the most two for each tub prepared, but no such meagre result for the trouble that has been taken need be feared. The rat finding its trust abused and itself struggling in the water at the bottom of the tub, soon recovers sufficiently from the shock to discover that there is an island of refuge, on to which he clambers, and squeals his loudest for help. Now the squeal of a rat in trouble attracts everyone of his kind within hearing, and very few moments will elapse before the victim of misplaced confidence is joined by one of his friends. The new comer is as quick to discover the chance of escape from a watery grave as was the original victim, but when he attempts to avail himself of its presence it becomes apparent that there is not room for more than one upon it. The first comer resists with tooth and nail the efforts of his companion in trouble to dispossess him of his coign of vantage, and the squeals which form an accompaniment to the fight for a footing upon the brick attract more rats to the scene of the tragedy. The conflict waxes more and more furious as rat after rat topples into the water, and, by morning, bedraggled corpses in plenty will gladden the eyes of the man whose losses at the teeth of rats have induced him to adopt this means of thinning their numbers. Some years ago the plan described above was tried in a City warehouse, with the result that 3,000 rats were destroyed in a single night."

Chickens will not thrive if they are covered with vermin. The best way to prevent insects from coming on them is to keep them perfectly clean, and every now and then to rub a little flowers of sulphur or some other insecticide under their wings and about their feathers. Their coops should also be occasionally washed with some good disinfectant.

Wet and damp cause a great many deaths among young stock. In fact, if young birds are kept in a damp spot they cannot thrive.

Not only should their coops be water-tight, but their run should be dry underfoot, and they should never be allowed to go out in the open during wet weather.

When the brood is about six weeks old, the mother will, as a rule, leave it of her own accord If she does not, she may be taken away, unless the weather is at the time very cold : in that case she may be allowed to stay with them as long as she is willing. The young birds should be bedded on straw at night for some months, as if they are allowed to roost too early their breast-bones become crooked, and they are disfigured for life. When the cockerels begin to crow it will be advisable to separate them from the pullets, and, if they commence fighting among themselves, it will often be found necessary to separate them from one another. But cockerels that are brought up together usually live peaceably enough with each other for the first twelvemonth or more.

No attempts should be made to force the pullets to lay till they are about six months old. Then they may be given a more stimulating diet, a little meat every day, and a little spice once or twice a week. All pullets should commence to lay when between six and nine months old.

CHAPTER VII.

ARTIFICIAL INCUBATION.

Artificial incubation is by no means a new thing. It has been practised by two or three nations, resident in suitable climates, since time immemorial. Yet it is only within a very few years that the art has reached such a state of perfection as to enable eggs to be hatched out with any degree of certainty in cold, variable climates like our own. The need for incubators soon becomes apparent to all who undertake poultry-keeping on a large scale. Hens will not sit at the time when they are most required, the beginning of the year; and even when they do come on the cluck, they are often very unreliable, and give their owners a great deal of trouble. Sometimes they eat their eggs: sometimes they break them: sometimes, after sitting on them for a fortnight or more, they forsake them and let them spoil. Consequently it is only natural that poultry-keepers should seek to obtain some efficient substitute that should do the work of the hen as well, more certainly, and with less trouble. Incubators are an attempt to do this; and though by no means perfect, results from them are, as a rule, equal to the average results from a number of hens.

In Southern China the eggs of ducks are hatched artificially on a very large scale. The method employed seems simplicity itself. A superior class of peasants make it their business, and carry it on in houses containing long, low rooms, used during the hatching season for nothing else. The eggs are brought in by people from the surrounding country, and are put into well-covered baskets. The baskets are placed in grates, and are warmed by having charcoal fires lit underneath them. At the end of a fortnight the eggs are removed on to big tables, where they are placed in rows, covered with quilts, and left, without the fires below, for another fortnight. At the end of that time thousands of little fluffy creatures break their way out of their shells, and the tables that but a few hours before were still and silent, are now full of life. When the ducklings are about twenty-four hours old, they are sold to the country people and duck-boat keepers for a penny each. A penny in China, however, is equivalent to more than a penny in England.

The method employed in Egypt seems still more simple. In the spring of each year a certain community of people undertake the hatching in various parts of the country. Their hatching establishments, or, as they are called, "maamals," consist of a central passage surrounded by a number of two-storied ovens. Each establishment has from a dozen to a score of ovens, and each oven is from fifty to seventy square feet in size. The eggs are first placed in the bottom stories of the ovens, and fires are lit on the top stories, the heat thus descending on to the eggs. The fuel used consists of "gel-leh," a sort of thin round cake, made by the mixture of cow or camel dung with short straw, and dried in the sun. The fires are kept up for about ten days, and at the end of that time they are allowed to go out. Then the eggs are re-arranged in single layers, on both the top and the bottom stories, every aperture is closed up, and they are thus left until hatching day, the temperature of the atmosphere being sufficiently high to complete the work.

Artificial incubation has reached the height of perfection in Egypt, and hens are hardly ever used there for the hatching-out of eggs. The output from the maamals is very large. There are over two hundred of them, mostly to be found in Lower Egypt; and, according to a Government return issued some time back, they hatched eighteen millions of chickens out of twenty-six millions of eggs in one year.

It is often asked why artificial incubation cannot be carried on in this country like it is in Southern China and Egypt. The great reason is that we live in quite a different latitude. In those countries the climate is such that, at certain seasons of the year, the eggs would almost hatch-out by themselves, without any attention; and it is only during these seasons that the work is carried on.

The first European to devote any serious attention to the problem of artificial incubation was M. Reaumur, the famous French philosopher. Hearing of the Egyptian method, he determined to try to do something similar in France. He carried on long and wearisome experiments, which it would take too long to describe here, and if he had not possessed the patience of a philosopher he would more than once have given up in despair. For a long time he met with nothing but failure, but at last he succeeded in hatching-out chickens in apartments constructed above bakers' ovens, and by means of heat obtained from dung. This caused him to imagine that a time would come when every bakery would be turned into an egg-hatching establishment, and when the making of bread would be combined with the artificial incubation of chickens. He described his experiments to the French Academy, and afterwards, about the middle of the eighteenth century, he published a book on the subject that attracted a great deal of attention. Many people tried to follow his example, but they lacked the patience of the philosopher, and the results were so poor that the new hobby was soon forsaken and almost forgotten.

About the end of last century more efforts were made to invent workable incubators, but the inventors never succeeded in constructing really satisfactory articles. Yet one invention improved on another, and so the way was prepared for success. The Paris Exhibition of 1877 was the means of making English breeders familiar with some machines that our French neighbours had recently constructed. Several incubators were shown at the Exhibition that simply consisted of egg-drawers surmounted with large hot-water tanks, and surrounded with some non-conducting material, to cause the heat to be retained. These seemed to be very successful, and visitors to the Exhibition could see many chickens hatched-out by them. Yet for some time they refused to believe that such simple things could be of any use. It was not until the following year that their opinion was altered. A competition between the various makes of machines was then held at Hemel Hempstead, and, to the universal surprise, the simple apparatus shown by Mr. Christy came out at the top of the list, leaving other competitors far behind. This caused quite a revulsion of feeling, and for a time Christy's incubators were quite popular. Yet, while they were a vast improvement on their predecessors, they had many faults. The large hot-water tanks had to be filled with hot water twice a day, and this entailed a great deal of trouble. To remedy this, lamps were arranged to keep the water at the proper temperature. Then, to keep the heat still more steady in the egg-drawer, a thermostatic regulator was invented by Messrs. Clark and Gilmore. This regulator consists of a band of two metals of unequal expansion. The upper one is zinc, the lower one tinned iron. The zinc has far more power of expansion than the iron, but being both of one length and fixed together, the former cannot, when a rise of temperature causes it to expand, get away from the latter. This band moves slightly downwards when the heat becomes too high, and in its downward movement it causes a small aperture in the egg-drawer to open and allow the superfluous heat to escape; then the band moves up again, and the door is closed. Ventilation is provided for in this incubator by allowing air to enter through holes in the bottom case and go through a false bottom before reaching the egg-drawer.

In 1882, Mr. Hearson brought out what must be regarded as on the whole the best incubator that has so far been placed on the market. The great difference between this and other incubators consists of its very efficient heat-regulator. Above the egg-drawer is a tank heated by a hot-air flue passing through it. A lamp or gas-jet at the bottom of the flue maintains the warmth. When the temperature in the egg-drawer becomes too high, a small capsule on it expands, causing a valve on the hot-air flue to open and allow the excess of heat to escape. The capsule consists of two brass plates, soldered together, and enclosing between them a few drops of a special volatile liquid that will boil at the required temperature. The boiling of the liquid causes the brass plates to expand, as of course vapour requires a far larger amount of room than the liquid it comes from. This regulator is so very simple, yet so sure in its action, that it practically ensures a regular, steady heat in the egg-drawer from the beginning to the end of the hatching season, with hardly any trouble to the attendant. The boiling point of the enclosed spirit is, as in the case of all liquids,

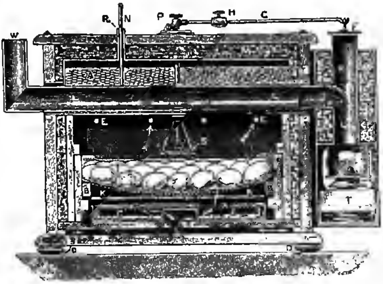

FIG 9. HEARSON'S INCUBATOR.

raised or lowered by an increase or decrease of pressure on the capsule, which is effected by sliding the lead weight H, on the lever C, to the right or left. By this means the capsule may be made to lift, and with it the damper F, at the required temperature. In Fig. 9, AA is the tank; BB movable egg tray; CC, water-tray; DDD, holes for fresh air; EE, ventilating holes; F, damper; G, lever; H, lead weight; KK, slips of wood; LLL, lamp chimney and flue pipe; MMM, non-conducting material; N, tank thermometer; O, needle for communicating the expansion of the capsule S to lever G; P, milled head screw; R, filling tube; S, thermostatic capsule; T, lamp; V, chimney for discharge of surplus heat; W, ditto for discharge of products of combustion.

Since the expiration of Hearson's patent on the thermostatic capsule, there are now many incubators on the market, made on the same principle, and almost exactly the same in construction as the one just described. Of these Proctor's "Reliable," Abbot's "Nelson," Taylor's "Popular," and Thompson's "Excelsior" incubators may be mentioned. Corteen's "Peripage" differs from the above in that the flue through the tank is made by curving or shaping the copper bottom of the tank itself into the form of a pipe or tube along the bottom of the tank. This does away with the soldered joint, and thus reduces the danger of the leakage of water from the tank to the flue.

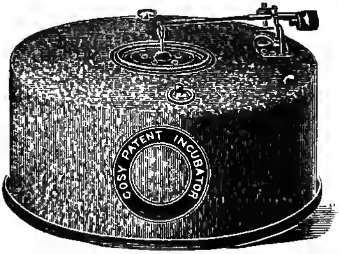

FIG. 10.—WILSON-WILSON'S INCUBATOR.

Another type of incubator which has gained considerable popularity, especially for its simplicity, is Wilson-Wilson's "Cosy," as illustrated in Fig. 10. The walls of this incubator are of porous material, to correspond with the feathers of the fowl. Fresh air passes inward, and vitiated air outward, without danger of draught. The lamp is placed in the centre, protected by a perforated zinc cylinder, and has a special air supply between the oil reservoir and the eggs. The top of the incubator lifts off for attention to the eggs, which are placed on sand, covered with flannel. This is kept from becoming too dry by a supply of water which passes under the sand, and gradually rises to the surface to be evaporated. The spirit capsule regulator is used in this, as in nearly all other incubators.

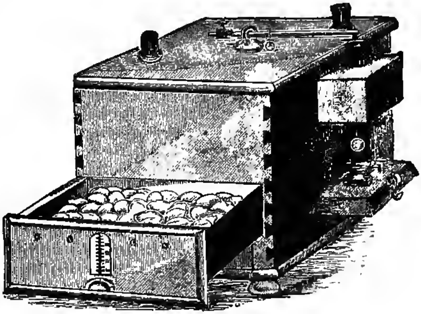
FIG. 11.—TAMLIN'S INCUBATOR.

Tamlin's "Nonpareil" incubator (Fig. 11) is also of the hot-water pattern, but instead of the flues from lamp passing through the tank, the water is heated in a boiler surrounding the lamp flue, outside the incubator, there being a continuous circulation of heated water from the boiler to the tank, and of cooler water from the tank to the boiler. The ventilation and moisture supply are the same as in the incubator in Fig. 9. In this incubator the usual spirit capsule is suspended in a patented insulated support. This insulation, by a material which is a bad conductor of heat, renders the capsule more sensitive, as metal is slower in absorbing heat than the air in the incubator, and thereby prevents the capsule from lifting as soon as it otherwise would if affected by the air only. The metal also retains the heat conducted directly from the tank, to which it is attached, longer than the air, and, consequently, causes the capsule not to close the damper as soon as if affected by the air of the incubator only.

In 1886, Mr. W. H. Hillier brought out an incubator, heated by hot air. With later improvements, this hot air is radiated from a heating plate in the centre of the bottom of the incubator. The warmed air rises from the plate, and descends again to the eggs.

No egg should be placed in an incubator unless it is fresh. Hens will sometimes hatch-out eggs that are some weeks old, but incubators rarely. The fresher the egg is, the better the chance it stands of hatching out. A mistake is sometimes made in keeping the egg drawer at too high a temperature. The right heat is between 103 and 105 degrees Fahrenheit, or as near the mean, 104 degrees, as possible.

Nothing conduces to success in artificial incubation more than a suitable place for the location of the incubator. It often happens that an incubator hatches well in one place, but not in another where the conditions are less favourable. The best location is one fulfilling as nearly as practicable the following conditions. First, an equable temperature, varying as little as possible between day and night. For this reason, iron or glass buildings are not suitable, as they get very hot in sunny weather during the day and rapidly radiate the heat at night. A room on the north side of a house is better than one on the south; a room on the ground floor is better than one in the attic; and an underground cellar, if well ventilated and not dark, is better than either. A second condition is plenty of pure air of a moderate degree of humidity, though a damp room is better than one too dry, provided there is no smell arising from want of ventilation.

The eggs selected should be of medium size, with smooth shells, and from healthy, vigorous stock, preferably over one year old. Eggs from immature, weakly, or unhealthy birds will *hatch*, but the stamina of the chicks will be such that they will take more rearing than they are worth.

The best temperature, as before stated, is between 103 and 105 degrees, but incubator operators are advised to test the correctness of their thermometers. Many hatches are spoiled by trusting to faulty thermometers, causing the incubator to be worked and the eggs to be at a temperature a degree or two too high during the three weeks' incubation. For one, two, or even a few days this may not be serious, but continued during the whole period it is sure to be fatal to success. See that the bulb of the thermometer is not too high above the eggs. The best position is touching a fertile egg, or about an eighth of an inch above it.

It is better not to add cold eggs to those in the incubator already partly incubated, for the reason that they are apt to chill them. If it is particularly desired to do this, the two lots of eggs should be well separated with strips of wood or several thicknesses of paper.

Turn the eggs twice a day, to prevent the embryo chick from clinging to the shell, and allow them to cool while trimming the lamp. It is a good plan, also, to change the position of the eggs regularly, for instance, removing those in the middle to the sides. After the eggs begin to chip, turn the chipped sides up when the drawer is opened morning and evening, but close the drawer again with the least possible loss of time.

For fuller information in the science and practice of artificial incubation, the reader is referred to "Incubators and their Management" (L. Upcott Gill, 170, Strand, London, W.C.).

"It may be very easy to hatch out chickens artificially; but how can you rear them after they are hatched?" This is by no means an uncommon question. Many people seem to imagine that to rear chickens without a hen is impossible. Now, as a matter of fact, it is the easiest part of the whole. Keep a chicken dry, feed it well, and give it the proper degree of warmth, and it will get on all right enough. An artificial rearer, or, as it is often called, a "foster-mother," is a most handy thing to have about a poultry-yard, even when the eggs are hatched-out by hens. A hen sometimes deserts her chickens, sometimes she turns against them, or she dies or is killed when the chickens are too young to be left alone. In such a case an artificial rearer will prove an invaluable boon to the breeder and will save the lives of chickens that would otherwise perish.

The principle on which most foster-mothers are made is extremely simple. There is a small chamber, to which the chickens can come and go at will, kept to a heat of from 60 to 90 degrees, according to the state of the weather and the age of the chick. The heat is usually supplied to the chamber either by means of a tank of hot water or by a hot-air flue. There ought to be a small glass-covered run attached to this chamber, and a wired-in run by it.

The "foster-mother" should not be allowed to get too hot. For the first day it may be kept at 90 degrees, for two or three days after that at 85 degrees, and then it may be allowed to go down to about 70 degrees, according to the state of the weather. The finer the weather is, the less heat will be required in it.

The chickens must be allowed an abundance of fresh air, and on no account should they be coddled. Their run should be carefully kept clean, and they should be frequently removed to fresh ground. The general treatment of the birds is the same as that described in the chapter on "Chicken-rearing."

CHAPTER VIII.

BREEDING.

SYSTEMATIC breeding must be carried on if permanent success in poultry-keeping is hoped for. It is this that has caused the great improvement that our domestic poultry has undergone during the last few years, and it is only by breeding that any poultry-keeper can hope to obtain stock above the average. It cannot be too much insisted upon that if we hope for any improvement in our stock we must continually select our best birds and breed only from them. The theory of heredity is now universally recognised as true, and men are coming more and more to see the influence of parents in moulding the character and physical traits of their progeny. Thus it is commonly seen among human beings that a strong man and woman usually have strong children, while the issue of a consumptive parent is too often consumptive also. The same law holds good in the breeding of poultry. *Like produces like.* A sickly fowl will produce unhealthy chickens; the birds hatched from the eggs of a good layer, will, as a rule, be good layers; and parents that have liver disease or roup will hand down to their progeny a liability to acquire the same disease. This fundamental fact must be fully understood by all who hope to improve their poultry. It is necessary to always breed from those birds which have, in the most marked degree, those traits which it is wished to perpetuate. Thus, supposing a breeder wishes to have a good laying strain of birds, he must pick out of his stock a few of the very best layers, mate them with a cock that comes from a good laying family, and breed only from this pen. The next year he must find out which of his pullets are the best layers, and breed from them. So he must go on, year after year, always breeding from his best layers only, and then, in time, he will obtain what is known as a "good laying strain," *i.e.*, a strain of birds whose laying powers are well developed.

This will explain why so many exhibition strains of birds are such bad layers. Their owners select them for their size, for the colour of their feathers, and for the nearness with which they approach the exhibition standard of perfection. Laying powers are not thought of. An owner of exhibition stock would rather breed from a hen that laid only forty eggs a year, but was perfectly marked, than he would from another bird that laid two hundred eggs a year, but was mismarked. Nor is he to be blamed for this, for it would pay him better to do so. But the natural consequence is that, as the laying powers are not developed, they degenerate; and so it happens that many of those strains of birds that take the greatest number of prizes at the shows are the worst possible layers.

It is sometimes found to be difficult to tell which are the best layers. Those who keep only a few fowls and watch them closely can often distinguish the egg of each bird. But where many are kept, this is impracticable. As simple a plan as any is to note which birds lay most eggs in the depth of winter: this can be easily done, and it will usually be found that such birds are among the best layers. An active, intelligent-looking bird will, as a rule, be a better layer than a dull, lazy-looking hen. A large, bright-looking comb (large, that is, in proportion to the average of the breed to which the bird belongs) is another common sign of a good layer.

In the selection of breeding stock, it is very important to see that every bird is perfectly healthy. Sickly fowls have never yet paid, and never will. If they are bred from, their progeny are almost certain to be delicate, and in time to develop the same disease as their parents had. This applies with special force where the birds have either roup or liver disease. This law is so apparent as to seem not to require repetition, but experience has taught me that there are many people who breed from birds lacking stamina and then wonder why they find it so difficult to rear their chickens.

Hens, whether they are kept for breeding from or merely to supply eggs for consumption, should never be allowed to live till they are more than two-and-a-half years old; for after that time there is a great decline in their laying powers, and they do not pay for their keep. No matter how good a layer a hen *has* been, it may be taken for granted that after it has laid for two seasons its best days are over, and it is only fit for the pot. So, every autumn, before the birds commence to moult, all the hens that are above two years old should be picked out and in some way disposed of. Care must also be taken in purchasing any birds, that they are not old; for sellers, especially the men who go round the streets of our large towns every autumn with cartloads of live birds, often try to palm off old fowls for young ones on those who know no better. It is somewhat difficult for a beginner to distinguish a young bird from an old one. The feet of a young fowl are smoother than those of an old one, and it generally has a youthful look about it that the other lacks. Mons. Charles Jaque gives the following signs for distinguishing a young bird from an old one in "Echo de L'Elvage Belge:" *

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* Quoted in *Fowls*, 7th November, 1889.

"In lifting up the wing, and pushing aside the feathers of the sides, you will find, in the case of a young hen, a long down, light and close, arranged regularly between the other feathers which cover these parts of the body. Through the skin, which is of a delicate and rosy tissue the very small blue veins will be apparent. In a hen more than a year old, the down and the veins will have disappeared, the skin is of dull white, and dry, less smooth, and somewhat farinaceous-looking. The smooth leg, with fine bright scales, is also one of the best indications. A hen that has laid has the anus very large, one that has not laid has it very straight, and this organ commences to stretch when the pullet begins to lay."

Some cooks have a difficulty in knowing what to do with old hens, for if they are roasted they are almost as tough as leather. "As tough as an old hen," has passed into a proverb. But if they are allowed to gently boil for five or six hours, the water never more than simmering the whole time, the old fowls will be found quite tender, and of a better flavour than even young birds.

The male bird should always, except in very high-class breeding, be of a different family from the hens he is mated with. Mankind has recognised, from time immemorial, that the union of near relatives is unadvisable and unwise. Their progeny lack stamina and if there is any weakness in the family it will be intensified in the forthcoming generation, owing to its being in the constitutions of both the male and the female. There are exceptional cases, in very high-class breeding for exhibition purposes, when the introduction of fresh blood would be so liable to lower the points of the strain, that it is better worth while to run the risks of in-breeding. But as an almost universal rule, in-breeding is extremely unwise. It is generally recognised that the hen has most influence on the shape, build, and size of the chicken, while the male bird has most influence on the other points.

The number of hens to be placed with each male bird will vary according to the breed the fowls belong to, and with the time of year. The lighter and more active the cock is, the more hens he can take. A fairly active cock of the very heavy breeds, such as Cochins, Brahmas, and Langshans, should not have more than four or five hens: a cock of such breeds as Plymouth Rocks, Wyandottes, Dorkings, and Orpingtons, may have from five to seven hens: while a cock of the lighter breeds, such as Leghorns, Houdans, Hamburghs, and Minorcas, may be allowed from seven to fourteen hens.

CHAPTER IX.

BRITISH BREEDS OF POULTRY.

ENGLISH poultry-keepers have, as yet, scarcely been smitten with the mania for manufacturing new breeds; and, consequently, all British varieties of poultry, with only one exception, belong to kinds that have been established for many generations. The Game Cock was described by Chaucer, and the Dorking probably attained its present condition, as far as shape and quality of flesh are concerned, hundreds of years ago. The only new fowl that can be called British is the Orpington; though it must be added that more than one variety of foreign breeds have been made up in this country.

DORKINGS.—Dorkings are one of the oldest varieties of poultry we possess, and they deservedly occupy the place of honour, as being, on the whole, the best table fowls that can be kept in this country. They have short, white legs with five toes, and their bodies are of a remarkably massive, almost square shape: it is this that makes them so valuable as table fowls. Their combs may be either single or rose. There are four varieties of this breed: Coloured, Silver-grey, Cuckoo, and White. Coloured Dorkings are the most largely kept, and are somewhat larger and hardier than the other kinds. The colours of the cock are: Breast, tail, and wing-bar, black; hackles and saddle feathers, light grey, striped with black; wing-coverts, white. The hen has a grey neck-hackle, striped with black, a deep reddish-brown breast, each feather being tipped with black; the tail and the remainder of the body are nearly black. A great deal of latitude has been allowed in the past about the exact shade of the feathers of Coloured Dorkings. Happily, breeders and judges have paid more heed to size and condition than to the mere colour of feathers. With Silver-grey Dorkings an exactly opposite course has been taken. They have been bred to the height of perfection, and consequently they are not so useful for economic purposes as the former. Their plumage resembles that of the Coloured variety in many respects, but the hackles of both cocks and hens are of as silvery-white a colour as it is possible to breed them. The hens are also somewhat lighter-coloured, and their breasts are of a salmon hue. Cuckoo Dorkings have the same plumage as Plymouth Rocks. They are but seldom kept now. The most beautiful fowls of this breed are undoubtedly White Dorkings. They are large and well shaped, and every feather in them is of a pure snowy-white colour.

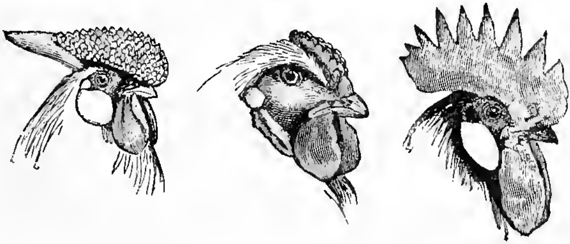
1. Rose Comb. 2. Pea Comb. 3 Single Comb.

FIG. 12. TYPES OF COMBS.

As has already been said, Dorkings are, on the whole, the best table fowls that can be kept in this country. The flesh of Game is slightly better-flavoured, and the French varieties would, if it were not for their delicate constitutions, rival them for the post of honour. But we find in the Dorking all the required points for a first-class table fowl. It is large, the usual weight of cocks being from seven to eleven pounds, and that of hens from five to eight pounds. The young birds feather well and grow rapidly. With good treatment cockerels can be got to weigh about four pounds each when twelve weeks old. What is of even more importance than mere weight is the quality of the flesh: this is white and juicy, there is very little leg and an abundance of breast-meat.

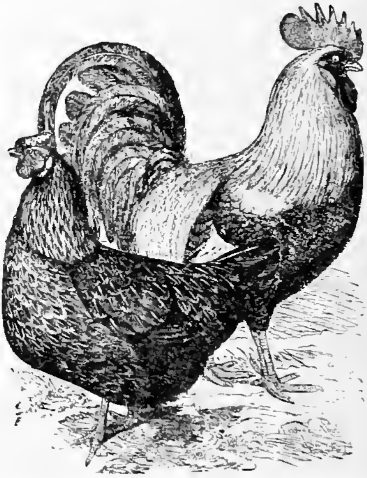

FIG. 13. COLOURED DORKINGS.

But while Dorkings occupy the first rank as table birds, they are only moderate layers, and they are by no means suitable for keeping in confined runs, or in damp or bleak situations. They require a grass run, however small, and they must be kept very dry and clean. Those who want a good all-round fowl can find many breeds more suitable than this one. The hens make capital mothers, though their fifth toe is somewhat in the way, and occasionally causes them to break an egg or crush a chicken. They lay fair-sized eggs averaging a little over two ounces each.

GAME.—For many generations the Game fowl was bred for fighting purposes and consequently it has developed into a long, thin, and intensely pugnacious bird, with well-developed muscles and unquenchable spirit. It has about as good a form as can be found for fighting purposes. Happily, cock-fighting is now a thing of the past, and those who once amused themselves by pitting brave bird against brave bird, have now to obtain their amusement in some other way. As a result of this, Game fowls are not kept nearly so largely as they once were. They are very good table birds, not very large, but of splendid flavour. The usual weight of the cocks is from five to eight pounds, and that of the hens from three-and-a-half to six pounds.

They are poor layers, but first-class sitters and mothers. Their chief economic value lies in their being such good birds for crossing with other breeds, in order to obtain first-class table fowls. The cross between the Game and the Dorking produces the best and the most rapid-growing bird for the early market that it is possible to have. In fact, if any of the varieties of table fowls are crossed with Game, they are usually improved in flavour of flesh and in rapid development, though not in size.

The chief objection to Game fowls is their pugnacity. The cocks *will* be masters over every other male bird within their reach, and woe to the unhappy fowl that refuses to submit to their rule. It is impossible to keep two adult cocks of this breed together, unless they have been brought up with one another from the nest, and even then it frequently cannot be done. But at the same time they are remarkably attentive to their hens, and will defend them against all comers. The same trait is seen in Game hens. They will die in guarding their chickens from all foes, and will fiercely attack any who may interfere with them.

There are seven leading varieties of Game:—Black Red, Brown Red, Duckwings, Piles, Black, and White. The general characteristics of all these are much about the same. Both cocks and hens have an erect, commanding carriage, as though they knew themselves to be commanders among their kind; their plumage is close, short, hard and glossy; head, long, thin, and somewhat cruel looking; neck, long and thin; back, short and flat, getting narrower towards the tail; breast, fairly full and broad; legs, long and thin. It is usual to "dub" them (*i.e.* to cut off the comb and wattles close to the base), in order to prevent their injuring one another while fighting; but where this is not done the combs only grow to a very small size. Within the last few years the Society for the Prevention of Cruelty to Animals has prosecuted several persons for "dubbing" their birds, and in almost, if not in every case, has secured a conviction. Game-keepers argue, however, that the "dubbing" is really a kind action, as it prevents the birds inflicting ten times more pain on themselves in their quarrels.

The plumage of the Black Red Game cock is—shoulders, back and wing bows, crimson; neck-hackle, saddle-hackles and head, bright orange red; wings, breast, tail, and under parts of body, black. In the hen, the breast and thighs are a salmon colour; head and neck-hackle, golden, while the two top feathers of the tail should have a small amount of partridge on them. The legs are a willow colour, and the eyes should be a very fiery red.

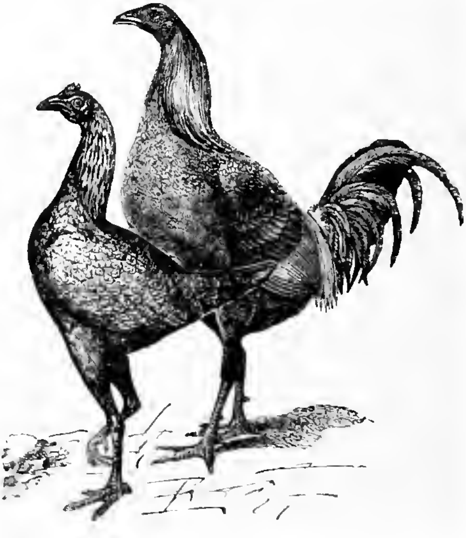

FIG. 14. BLACK-BREASTED RED GAME.

Brown Red Game have black eyes and beak, and very dark legs. The face of the cock is purple; the back, shoulder coverts and saddle, lemon colour; the neck-hackle a very bright lemon; the breast black, each feather regularly laced with lemon. The thighs, tail, and wings are black. In the hen, the head and neck are a bright yellow, and the whole of the remainder of the plumage a shining, greenish black; except the breast, which is often laced. Laced breasts are, on the whole, to be preferred to pure black ones.

Duckwing Game are among the most beautiful of any. The cock has bright red eyes and face; white head; neck-hackle, straw-colour; back and wing bow, orange; wings, breast, tail and under parts of body, black. In the hen, the head and neck are a silvery grey; breast, salmon; back, shoulder coverts and wing, grey; thighs, pale salmon. The eyes of both cock and hen are a pale salmon, and the legs willow.

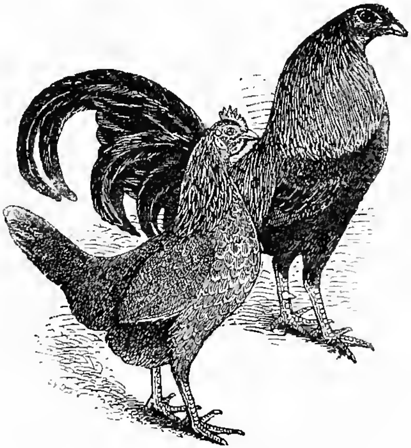

FIG. 15. OLD ENGLISH GAME.

Pile Game are another very beautiful variety. The cock has a bright red face and eyes; head and neck, orange; saddle and back, rich red; while the remainder of the plumage, with the exception of the red wing bay, is white. Very often the white is not pure, however, but a little black is interspersed among it. The plumage of Black Game is of a glossy, greenish hue; the legs are a dark willow or black. White Game have yellow legs, and a pure white plumage, without a coloured feather in it.

OLD ENGLISH GAME.—This breed is really the Old Game fowls that did duty in the fighting pits in the old days of cocking. Although a barbarous sport, it is impossible to look back without interest upon it, and to blind ourselves to the fact that the cock-fighters certainly bred a hard and a plucky fowl. It was at the time cock-fighting came to be suppressed in this country that the Modern Game type arose out of the old one. Exhibition specimens were bred with length of leg and neck as an important characteristic, leaving the Old Game fowls, known as the Old English, with the shapeliness that had always been their great beauty. Many colours and varieties are bred, including Black Reds, Spangles, Clays, Wheatens, &c., the two former being more generally met with than the others. In shape the Old English Game cock is a handsome bird, with a most proud bearing. He is also distinguished by a very long and gracefully-carried tail, whilst his hackles are both long and rich. The hen carries herself well, with more of an upright bearing. As layers they cannot be held to excel, not having been bred for that purpose. As table fowls, however, they are particularly useful, having large breasts and plenty of rich flesh. Breeders prefer the white legs, too, with which many of the birds are bred, and this, too, adds to their value as table fowl. They are useful for crossing for eating purposes with many breeds that are lacking in quality and quantity of flesh.

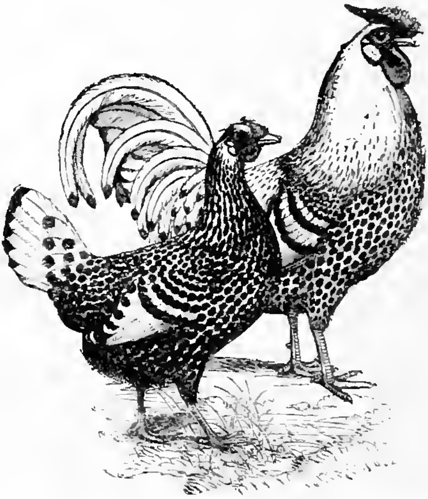

FIG. 16. SILVER-SPANGLED HAMBURGHS.

HAMBURGHS.—These are among the most beautiful fowls we possess, but they are not of much use, as a rule, for commercial poultry-keeping, owing to their small size and their lack of hardiness. There are five varieties of them—Black, Golden-spangled, Silver-spangled, Golden-pencilled, and Silver-pencilled. Of these the Black are altogether the most hardy, and lay the largest eggs. Next to them, but a far distance behind, come the Spangled; while the Pencilled are the most delicate of all. Hamburghs have rose combs; the face should be of as brilliant a red as possible, and the ear-lobes white. The tail of the Black Hamburghs is of a dark slaty-blue colour, and the plumage of a very glossy black. The cock carries its tail very erect. Black Hamburghs may be said to be, on the whole, useful fowls. They lay an abundance of eggs, and are fairly hardy; but they ought not to be kept in very small runs. They thrive best on grass runs in warm situations. Neither the Spangled nor the Pencilled varieties are worth keeping in their pure state, when there are so many better varieties to be had. Hamburghs are very susceptible to cold, and require to be kept warm and dry.

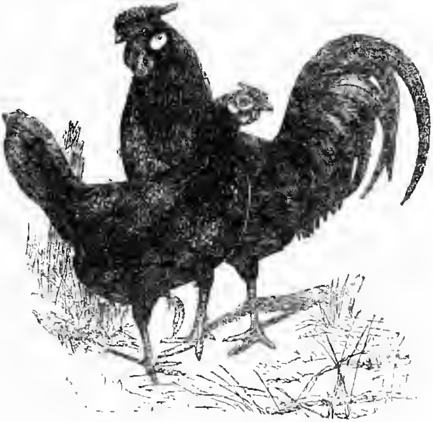

FIG. 17. BLACK HAMBURGHS.

Hamburghs are too small to be good table fowls, but they carry a remarkable amount of flesh on them for their size. They will be found specially useful for crossing purposes. A cross between Hamburghs and one of the heavy varieties, such as Cochins or Langshans, produces a good all-round fowl. Where Hamburghs are kept, one cock may be allowed to run with as many as ten or a dozen hens, provided they have a good range. The chickens should not be hatched-out too early in the year.

SCOTCH GREYS.—The great increase that has taken place during the last few years in poultry-keeping has led to many useful breeds that formerly were only known in a limited locality spreading all over the country. This has happened to the Scotch, Grey. A few years ago it was kept almost solely in Scotland, but its merits are now making it popular in England. It is a moderate layer and a good table bird—almost as good as the Dorking. It is a non-sitter, and has white, well-flavoured flesh.

The plumage is cuckoo-coloured, resembling that of the Cuckoo Dorking and Plymouth Rock. Its comb is single, and its legs are white, slate-coloured, or white and slate-coloured mixed.

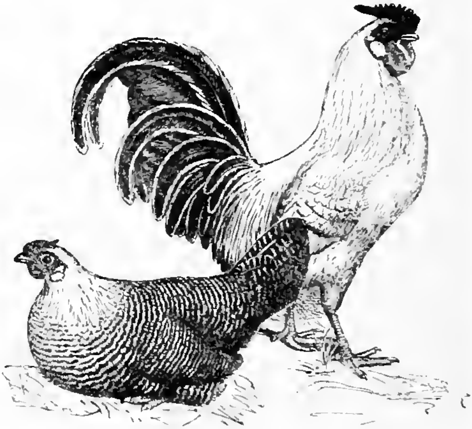

FIG. 18. SILVER-PENCILLED HAMBURGHS.

REDCAPS.—Redcaps are an old English breed, and have been kept about the West of England for a hundred years and more; yet, strange to say, they were comparatively unknown to the mass of English poultry-keepers until a very few years ago. At one time it seemed likely that they would die out altogether. Happily, they have been saved from this fate, and during the last ten years they have been rapidly growing in popularity. They deserve to be kept even more than they are, for they have many useful qualities. Their most peculiar feature, whence they derive their name, is their immense combs, which often reach an excessive size. Cocks can be seen at shows with combs nearly four inches broad and between five and six inches long. It has often been asked whether Redcap-breeders do well to encourage such large combs, or if it would not be better for them to encourage neater combs, of a more moderate size. The excessive development of some particular feature is too much aimed at by breeders to-day, and the results are by no means so satisfactory as some advocates of the modern system of poultry-breeding would have us believe. Such disproportionate growth of any particular part, whether it be comb, beard, or feathers, may be greatly admired by the breeders themselves, but it usually strikes outsiders as being something akin to a deformity. In many respects, such as the marking of feathers, Redcaps bear a striking resemblance to Golden-spangled Hamburghs. But there is no comparison between Hamburghs and Redcaps for economic qualities. The true Redcap is a great deal larger, lays a larger egg, and is hardier. A good cock should weigh from seven to nine pounds, and a hen from four-and-a-half to six pounds. Redcaps are splendid layers for warm situations, but they are not suitable for cold or damp places. Under favourable circumstances a good strain of birds of this breed will give from a-hundred-and-forty to two-hundred eggs a year. Mr. Wragg, the active Secretary of the Redcap Club, mentions a case where the proprietors of an American poultry-farm were so pleased with the Redcaps obtained from England that they bred them in large numbers, and cleared out all their Leghorns and Minorcas to make room for them. The eggs weigh about two ounces and are slightly tinted in colour. In appearance Redcaps are strikingly handsome. Their bodies are a deep reddish-brown-chocolate colour, and on the tip of each feather is a very dark blue spangle. The tail is black, and the neck-hackles are black, striped with gold.

ORPINGTONS.—The Orpington is the newest breed we have, and, unlike most of the new introductions, it has not come from America. Mr. Cook, a poultry farmer then living in the village of

Orpington, in Kent, first introduced the Single-combed Black Orpington to the poultry world in the autumn of 1886. He said it was made by crossing together Black Plymouth Rocks, clean-legged Langshans, and Minorcas. In the following year Mr. Cook also introduced the Rose-combed Black Orpingtons, which he had made up from sports, rose-combed Langshans, and other rose-combed black birds. The following is the raiser's description of the Single-combed variety. "They have a red face and ear lobes, black beak, very broad breast, and long breast-bone; flesh white; plumage black throughout, with a splendid green sheen. The cocks have long tails, with very fine hangers (feathers) at the side of the tail; they have a number of these feathers, which give the birds a very graceful appearance. The tail should be carried well back, not straight up. The legs are black, and free from any tint of yellow, a little red, however, not being objectionable; four toes on each foot, the feet should be white underneath. The hens should in every way correspond with the male bird, except that the comb is smaller. If it is evenly serrated and straight, it may fall a little on one side." Orpingtons bear a very strong resemblance to clean-legged Langshans, and, though they do not come up to all that was claimed for them, they are a fairly useful all-round fowl. They are good layers of brown-shelled eggs, but their black legs prevent their

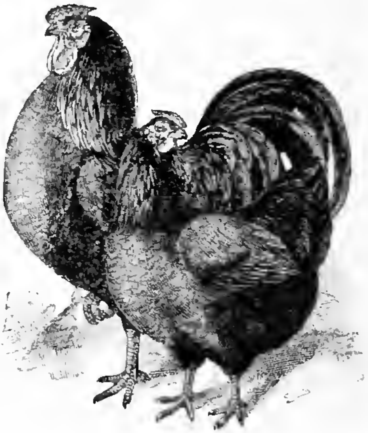

FIG. 19. ORPINGTONS.

being considered good table birds. They have spread rapidly through the country, probably more rapidly than any other breed.

The great fault of Orpingtons is that Mr. Cook introduced them too early, before the type had become properly fixed, and as a consequence a very large proportion of the birds do not breed anything like true to colour. It is often quite a chance whether, out of a number of chickens, a single cock will be obtained fit for breeding from. This fault is being somewhat overcome by constant selection, but a vast quantity of mismarked birds are still bred.

In 1890, Mr. Cook brought out still another variety of this breed—the White Orpington. Mr. Cook says it is made from the Black Hamburgh, White Leghorn, and White Dorking, and he adds: "They do not breed true to colour, and it will take some time before we get them to breed true to type, as, naturally, a yellow leg sometimes crops up, and in a few instances a little feather shows upon the leg; but these cases are few and far between; also a few dark feathers appear now and again in the plumage."

White Orpingtons are considerably smaller than the Black variety. The following is Mr. Cook's description of them: "The correct colour is white throughout; rose comb rather large, and set well on head, with a neat peak on the back; the ear-lobes are not noticed, they may be red-and-white, the same as the Dorking's . . . White beak, nicely curved, white legs and feet, four toes on each foot. The carriage is much the same as that of a Dorking, only they are smaller and more compact . . . The eggs are white; some of them may be a little tinted."

Without a doubt the most popular variety of the Orpington family at the present day is the Buff. Indeed, we are not far wrong in stating that no single variety is so widely kept as this latter production of Mr. Cook. But for all that, the Buff Orpington is by no means original. It calls to mind another English variety, or species, the Lincolnshire Buff, which, however, differs in certain respects. The Buff Orpington has white legs, free from feathers, whereas the other is generally seen with yellow legs, feathered to a greater or less extent.

In breeding Buffs the main point is the colour. When Buff Orpingtons first appeared, the colour was patchy, and white and black tails and flights were apparently part and parcel of the variety. Great trouble was experienced with the legs, too. Many birds came with yellow and feathered legs, throwing back to the Cochin parentage. But fanciers have succeeded in breeding out the yellow and feathered legs, so that they seldom crop up; and have, in addition, so perfected the shade and colour of the plumage that nowadays the feathering of the Buff Orpington is a model of evenness. The most difficult matter is the breeding out of the white, which is far more objectionable than black in the plumage. In choosing Buff Orpingtons, it is advisable to turn up the feathers and see that they are buff to the skin. If the feathering shades to white beneath the surface there is always a probability of white feathers cropping up, and judges at shows always make a point of passing over birds that show even a little white, whereas the same amount of black would be excusable, since it is much easier to breed out.

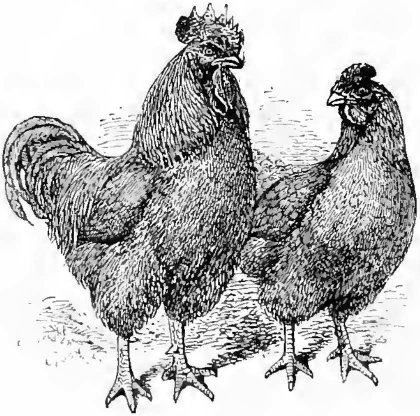

FIG. 20. BUFF ORPINGTONS.

It is really because of their value as utility fowls that Buff Orpingtons have become so popular. As layers in cold weather they are without an equal, although this virtue is discounted to some extent by an inclination to broodiness, which is frequently apparent, especially in warm weather. The eggs are brown and of good size, and the bird of this variety may be expected to give a better result in laying during the winter months than the summer—a fact which is worth noting by producers who know the value of an egg at Christmas time. As a table fowl, too, the Buff Orpington is decidedly useful, carrying a lot of white flesh, which is, perhaps, inclined to coarseness. It will be found that young chickens take a deal of fattening. The bone is very large, and until the birds have attained a considerable age and size a great proportion of food goes to the formation of the frame, so that young birds are generally gaunt and without sufficient flesh for table purposes. For crossing, the Buff Orpington is especially valuable.

The latest variety is the Diamond Jubilee Orpington, a bird with the usual shape and characteristics of the breed and plumage of mottled-black, white, and red. But the variety seems so uncalled for, and is so indefinite in colour, that it is never likely to become popular.

LINCOLNSHIRE BUFFS.—If one can call to mind the Cochin when it first made its appearance in this country, one will have a very good idea of what the Lincolnshire Buff is to-day. It is not an exhibition breed, and is bred almost solely in Lincolnshire, where it is held in great regard both as a layer and a table fowl. Since the Buff Orpington appeared, the Lincolnshire Buff has been much overshadowed, many birds of the variety being sold as Orpingtons. Undoubtedly the latter variety contains much Lincolnshire blood, and very frequently the yellow and slightly-feathered legs, common to the older variety, crop up. The birds are large, and have good breasts, which fits them pre-eminently to take a prominent place as table fowls. The colour of the plumage is not as level as that found in Buff Orpingtons, as the point is not cultivated. As a purely utility breed, the Lincolnshire Buff is by no means to be neglected for the later show varieties.

ALBIONS.—This is a new breed, originated by Mr. Godfrey Shaw, a well-known producer of table fowls, and intended to fill the demand for a fowl that is really a good table specimen and a prolific layer. It is produced by crossing two Sussex breeds, and the result is in every way satisfactory, for the birds are handsome, being pure white; the hens are capital layers of large brown eggs, and excellent mothers; and the birds are among the best of table fowl. The authoritative description is: Plumage, flesh and legs pure white; small bone, long heel; four toes; shape between that of Plymouth Rock and Dark Dorking; comb, medium sized, single, and red; lobes and wattles, red; eyes, pearl.

CHAPTER X.

FRENCH BREEDS.

In France, poultry-keeping is looked upon as a serious branch of agriculture, and not, as here, a thing unworthy of the farmers' attention. Every holding, large or small, usually has some hundreds of birds. People in England often imagine that there must be a large number of poultry-farms in France, in order to produce the immense quantity of eggs it is able to send over to us every year. If by poultry-farms is meant farms on which nothing else but poultry are kept, then they are scarcer in France than they are in England. Yet there are quite a number of agriculturists who have one or two thousand birds, and it is quite a usual thing for there to be some hundreds of fowls on a small farm. Egg-producing is comparatively in a backward state in France. The hens seldom lay in winter, and there can be no doubt but that a very little attention to the laying qualities of the birds would enable French breeders to increase their output of eggs considerably. The one point our neighbours *do* understand is the raising of table poultry. All the French breeds are notable chiefly for their edible qualities, and in this respect it would be difficult to find their superiors. Nor is this to be wondered at. Poultry are a common food with the people, and no one can compare the cuisine of an ordinary French household with that of an English one without being struck with the far greater use in the former of poultry and their produce. Further, the breeding of first-class table poultry is encouraged by the offer of high prizes, and people are willing to pay a fair price for really good birds.

LA FLECHE.—La Flèche, like other French breeds is, first and foremost, a table bird. Its great merit is the exquisite flavour of its flesh; but it cannot be called a suitable breed for keeping in England, owing to its extremely delicate constitution. The colour of its plumage is a bright metallic black, and its peculiar horned comb gives the birds of this breed an unpleasant, diabolical appearance. They develop slowly, and in their native haunts they are good layers of large, white eggs. When properly treated they become very heavy, sixteen pounds being no uncommon weight for a pair of adult birds. But as they cannot be made to thrive in England, there is no need to describe them more fully.

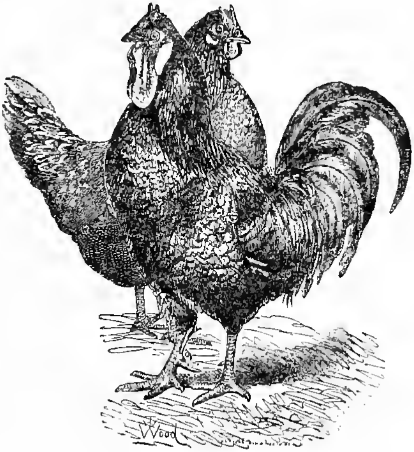

FIG. 21. LA FLECHE.

HOUDANS.—Houdans are the best French breed for keeping in this country. They get on best of any in our climate; they are good layers and first-class table birds. One well-known writer describes them as "extraordinarily hardy," but this term is liable to be misunderstood. Their hardiness is certainly extraordinary compared with that of, say, Les Flêches, but they are not nearly so capable of thriving under adverse influences as such breeds as

Langshans or Leghorns. They get on best in sheltered situations and if they are kept in draughty or damp houses they are very liable to take cold. Houdans cannot be relied on to lay during wet weather. Their eggs are white-shelled, and of a good size. In outward appearance the birds are broad-breasted and short-legged. There are five toes to each foot. The feathers are black, tipped with white, and there is always a strong tendency for the birds to become too light in colour. Where it is desired to keep the breed true to colour, this must be guarded against by breeding only from fairly dark birds, or, if the hens are light-coloured, mating them with a very dark cock. The comb is leaf-shape, and above it is a large crest. A crest is admittedly a drawback to the useful qualities of a breed, yet fanciers of the Houdan have for many years aimed at having the crest as large as possible, on account of its beauty.

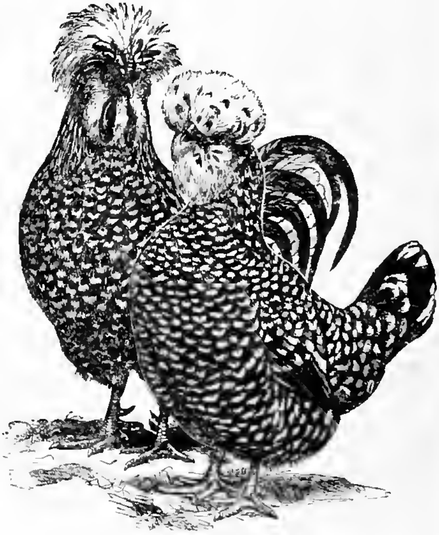

FIG. 22. HOUDANS.

As table fowls it is impossible to say anything but good of Houdans. Their flesh is white, well flavoured, and well placed. There is plenty of breast-meat and comparatively little leg. The cocks of this breed are especially virile and active. One can be allowed to run with a dozen hens, provided they have a good range. The hens are non-sitters. Houdans are also one of the best breeds we have for crossing purposes. A Houdan cock mated with hens of one of the heavier breeds will produce some of the finest chickens it is possible to have for all-round purposes.

CREVE-CŒURS.—The Crêve-cœur was first introduced into this country about the year 1852, by Mr. Vivian, but it has never attained great popularity here. The plumage of Crêve-cœurs is black; they have short legs, and large, circular crests. They are large-sized and good table birds; their eggs are white-shelled and above the average in size. But, in spite of these good points, their delicacy — that curse of most French breeds — prevents their being taken up to any large extent.

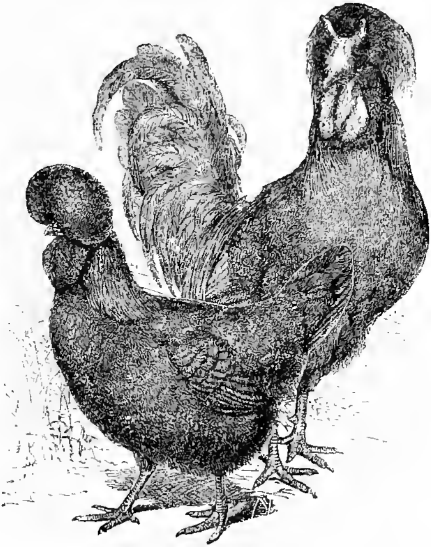

FIG. 23. CREVE CŒURS.

FAVEROLLES. — One breed of French fowls that is becoming very popular at the present day is the Faverolle. It can, however, only be described as a mongrel, for it has been produced by so many crosses among French fowls that it is practically impossible to define its parentage. It is, however, like all modern fowls, considered to be most valuable from a utility point of view, being a capital table bird and an excellent layer in all weathers. There are two varieties of

Faverolle, the Ermine and the Salmon. Of these, the former is seldom seen in this country; but the latter has become very popular, and among those who keep it is considered to be one of the finest breeds living. In appearance the Faverolle is decidedly singular. It has a good-shaped body, a head well carried, with single comb and bib and muff. The legs are slightly feathered, but from an exhibition point of view it has not yet been decided whether the legs should be clean or feathered, for the Faverolle is such a mongrel that no fixed type exists. The breed has a club, however, and a standard has been published, which will probably be considerably revised in the future. It is as a table fowl that the Faverolle excels; the flesh is white and of excellent quality; the bone is slight, and the breast is long and deep, something after the style of our English Dorking. Classes have been provided for the breed at some of the principal shows, and the number of entries received proves that the variety has numbers of patrons in this country. The colour of the best bird varies from salmon-pink on the back to a soft creamy tint on the breast and fluff.

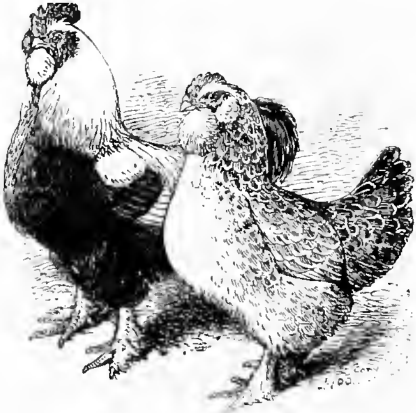
FIG. 24. FAVEROLLES.

BRACKELS.—This breed, or species, hails from the village of Brackel, in Flanders, where the peasants have bred it for many years, deeming it very precocious and eminently suited to the young table chicken trade. Of late they have been seen in this country, but it is very doubtful if they will ever become popular like the other Continental varieties. They are very similar to the Hamburgh, and are probably related to that breed. They are active little fowls, and have blue bills and legs, and very black eyes. The hens have the merit of being extraordinary layers, and, in addition, the cockerels are so precocious that they are used very largely in the production of what are known as *petit poussins*, a famous commodity in France, but practically unknown in England. *Petit poussins* are in reality little chickens, fed carefully from their birth and brought to a fit condition for table purposes at an early age. Frequently they are killed at the age of six weeks, before they leave the mother, whilst the birds that are not fit then go on until they reach the age of three months, when they seem to be once more in their prime. The Brackel is not a good table bird. Its value lies in its laying powers and its precocity. Though not strictly speaking correct, we have for convenience classed it amongst French Breeds.

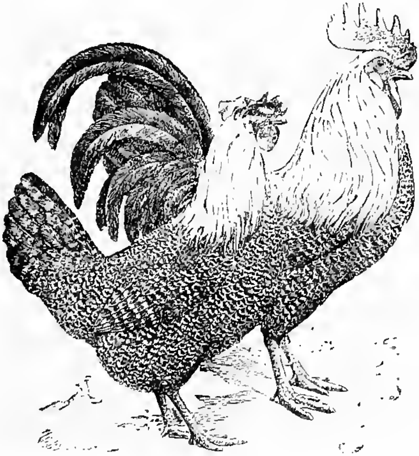

FIG. 25. BRACKELS.

VARIOUS.—There are several other French breeds, but they are so scarce in this country as hardly to be worth describing. La Bresse, Le Mans, and the Courtes Pattes are all good table birds and very suitable for the French climate, but they will not thrive among us.

CHAPTER XI.

SPANISH AND MEDITERRANEAN BREEDS.

THE four breeds which originally came from Spain and the shores and islands of the Mediterranean Sea have all very similar characteristics. They are non-sitters, only moderately good table fowls, and layers of large, white shelled eggs. They do not thrive well in cold or damp localities; but where the soil is dry, and the situation sheltered, they can be reckoned on to give a good return, in the shape of eggs, for their food.

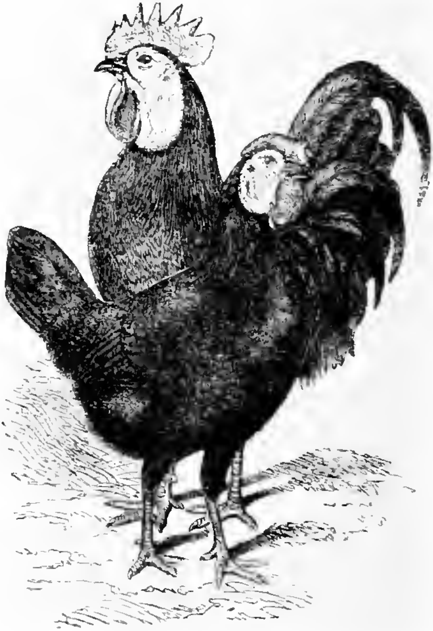

FIG. 26. SPANISH.

SPANISH.—The White-faced Black Spanish have been bred in this country for a very long time, and until about ten years ago they were one of our most popular breeds. But during the last ten years they have steadily sunk in popular estimation. The reason of this is easily found. At one time Spanish were fairly hardy, but exhibitors, by a process of *un*natural selection, in order to obtain birds with an excessive development of white on their faces, have caused them to become delicate, and have ruined their usual qualities. In sheltered town yards Spanish may sometimes, even now, give satisfaction, but as a rule they cannot be recommended. The chickens should not be hatched-out until May or June, as they fledge very badly, and if they have to face the bleak weather of the early months a number of them will die. Spanish are too slim to be good table birds, but what meat is on them is of fairly good quality.

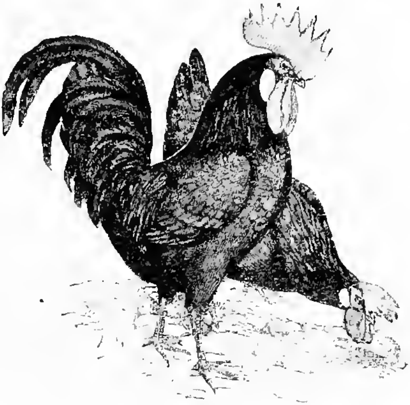

FIG. 27. BLACK MINORCAS.

The appearance of Black Spanish is almost too well known to require description. Their plumage is of a glossy black colour, their legs are blue, and they have four toes to each foot. Their faces, wattles, and ear-lobes are as white as it is possible to obtain them, and in exhibition birds the face should be absolutely free from any red streaks. The comb of the cock stands quite upright, while that of the hen hangs down.

MINORCAS.—The Minorca occupies much the same place to-day as Spanish did a few years ago. In outward appearance the two breeds strikingly resemble each other, the main point of difference being in the face, which in the Minorca is red, instead of, as with Spanish, white. Minorcas are first-class layers when kept in mild places, and they thrive very well in confined runs. A good strain, when properly kept, will often average as many as a hundred and-sixty eggs per bird per annum. The eggs are white shelled and of a large size, weighing close on two and a half ounces each. Minorcas make fairly good table birds for family use, the average weight of good specimens being seven pounds for cocks, and five or six pounds for hens. They are small eaters and non-sitters.

There are also White Minorcas, and White Spanish, which resemble their dark sisters in everything but plumage.

ANDALUSIANS.—In all but the colour of its plumage the Andalusian is the same as the Minorca, and it probably originally sprang from a Minorca cross. Even at present a Minorca cross is often used in the production of Andalusians, in order to obtain clearer-marked feathers. Andalusians were originally introduced into this country about the year 1852, and from the first they showed the fault of not breeding true. Their correct colour is a groundwork of blue, laced with black; but, even with the best strains of birds, it seldom happens that more than one half of the chickens come out properly marked. The remainder will be black or white. With inferior strains of birds the proportion of black-and-white chickens is naturally much larger, and not infrequently the breeder does not obtain a correctly-coloured chicken out of a brood. This often leads those who have purchased eggs for hatching from prize breeders to think they have been swindled; but the fact is,

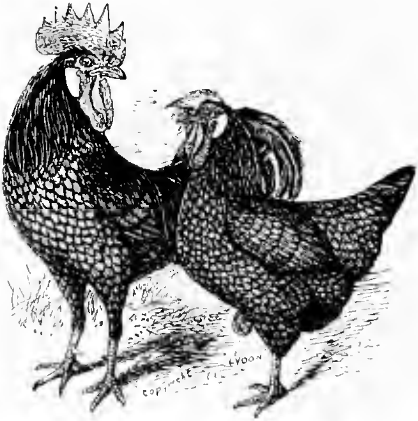

FIG. 28. ANDALUSIANS.

no hen will produce Blues from all her eggs. In regard to the laying powers and table qualities of Andalusians, what has been said of Minorcas will apply equally well to them.

ANCONAS.—This breed bids fair to become one of the most popular among non-sitting fowls. The first specimens of this variety were introduced by a certain Captain Rowle, of the "Bugle," who brought them direct from Ancona in Italy about the year 1884 or 1885. Very little notice was taken of them, however, and for some time it appeared that the breed had entirely disappeared. Then a few years later they were again imported, and this time found so many good friends that they have made phenomenal headway. They have actually been the subjects of a "boom," and the high prices paid for exhibition specimens testifies to their popularity in the show-pen. The Ancona is a colour variety of the Leghorn, and has probably been produced through a "sport" or by the aid of scientific crosses. It is common in its own district, though the birds that have come direct from Italy fall far below the standard of those we are accustomed to see in our best breeders' yards. In shape and general characteristics the Ancona is similar to the Leghorn, with neat, active body, erect, evenly-serrated comb in the cock, and drooping in the hen. The plumage, however, is mottled black-and-white. The black should predominate and form the ground colour, whilst

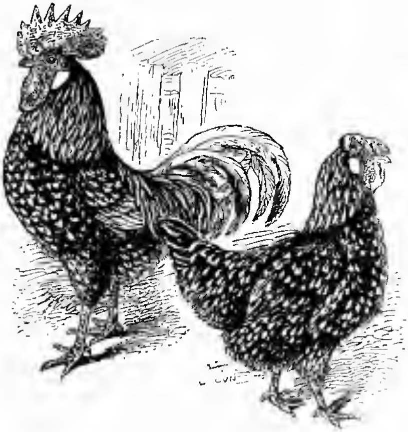

FIG. 29. ANCONAS.

each feather should be lightly tipped with white. According to the standard of the Ancona Club the yellow legs should be mottled with black spots. Good birds are as yet few and far between, the tendency being towards patchiness and uneven mottling.

It is a wonderful layer in summer, and by many is accounted as good in harder weather. Mrs. Bourlay, the President of the Ancona Club, whose home is situated in one of the most exposed spots in the Midlands, says she tried all breeds until she discovered the Ancona, and never found one to bear the hard winter and give such excellent results as this. No table qualities are claimed for the breed, although young cockerels and pullets fatten at an early age.

CHAPTER XII.

ASIATIC BREEDS.

WE are indebted to Asia for several breeds that have simply altered the face of modern poultry-keeping.

COCHINS.—To the Cochin fowl is due the credit of causing the great modern revival of interest in poultry-keeping that has taken place. A little over forty years ago, when it was first introduced among us, it was looked upon as quite a phenomenon. Its immense size, its tameness, and its hardiness were spoken of everywhere, and rumour greatly added to the wonderful qualities of the breed. At the time of its introduction the Cochin really was a useful fowl, but the same cannot be said of it to-day. Our English breeders have taken it in hand. and have—so they say—"brought it to a high state of perfection." In doing so, however, they have succeeded in eliminating nearly all the useful qualities from the breed.

Cochins attain an immense size, but, notwithstanding this, they are very poor table birds. Their flesh is inferior and coarse, and there is comparatively very little of it. A very large proportion of their bodies consists of offal, and what flesh they have is found chiefly on the legs, and not on the breast. The eggs of Cochins are very rich and usually of a good size; but the birds lay very few of them, owing to the fact that they are on the cluck during nearly all the spring and summer. One point in their favour is that a large proportion of their eggs are laid during the winter months. Cochins are the greatest sitters of any breed, yet they are so clumsy that they cannot be called good sitters or mothers. They are enormous eaters, and generally they are good for next to nothing but to look at.

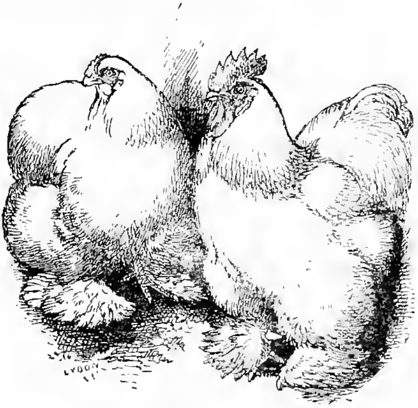

FIG. 30. COCHINS.

In appearance the Cochin fowl is decidedly cushiony, massive, well-rounded, and compact. There is not so much difference between the feathering and shape of cocks and hens as in most other breeds; but the cock is more upright, larger, and has a slightly larger comb. The combs of both cocks and hens are small, single, and erect; the head is small and neat; breast, broad, deep, and semicircular; tail, small and full; the legs are short, thick, yellow in colour, and very heavily feathered on the outside.

There are now five leading varieties of Cochins:—Buff, Partridge, Cuckoo, Black, and White. Buff Cochins are, on the whole, the most popular, and the most largely bred in this country. Their plumage may vary in shade from bright lemon to deep cinnamon; but, as far as possible, a well-bred bird should be the same shade all over. In cocks, the hackle, saddle feather and wing bow may be a little darker than elsewhere; and a very small amount of black is allowable in cock's tails, but no white should be seen. Partridge Cochins are somewhat better layers than Buffs. The colour of the plumage of Partridge cocks is, breast, underpart of body, thighs and tail, black; wings, a deep rich red; saddle, rich red, with a black stripe down the centre of each feather; legs, yellow with a little black interspersed. The plumage of the hens is a light brown, the feathers being clearly and uniformly pencilled a darker shade; the neck is a deep yellow, striped with black down the middle.

Birds of the Black variety are the most lazy and useless fowls known, even among Cochins; White Cochins are a little, though not very much better. Their plumage should be pure black or white all over, with no feathers of any other colour whatever. The plumage of Cuckoo Cochins is a light bluish grey barred across with lines of a darker shade, like Plymouth Rocks, or any other cuckoo variety of birds.

BRAHMAS.—Before the Cochin mania had died away, another Asiatic breed was brought before the Western world. According to the accounts given by those who possessed them, Brahmas were first brought by an unknown sailor from their native country to New York, in September, 1846. They were purchased by a man named Chamberlain, who in the following year sold his birds to a Mr. Cornish, and before long the breed was taken up by many fanciers both in England and in America. It would serve no good purpose to dwell on the bitter controversy that was carried on for many years about the real origin of the breed. Many believed Brahmas to be a made variety, produced from Cochins. This view was taken up by Mr. Darwin, in order to prove the possibility of living creatures under-going great changes in appearance in a short time. It is now generally abandoned, however, and the Brahma is to-day recognised as a variety altogether distinct from the Cochin. There are two varieties of Brahmas—Light and Dark. The outward appearance of both is similar in everything but the colour of the feathers. They have very small, neat-looking heads, small pea combs, large, ungainly bodies, and heavily-feathered, orange-coloured legs. Size and full feathering are the main points in exhibition birds. Brahmas will often attain an immense size, and cocks and hens have been known to turn the scale at fifteen and twelve pounds each respectively. But birds of such a weight are altogether too heavy for all useful purposes, except the pot, and lighter ones should be chosen for breeding from. The plumage of the Light variety is mainly white or cream colour, the correct shade being pure white. The flight-feathers and those in the neck-hackle are black, with an edging of white. Black feathers are interspersed in the leg and saddle feathering; while the tail and tail-coverts are principally black, one or two feathers being striped with white. In Dark Brahmas the predominating colour is black. The head, in both cock and hen, is white, and the neck-hackle black, striped with white. The breast and tail of the cock are black, the back is principally white, and the other parts of the body are chiefly black, a little white being mingled among it. In the hens the ground-colour of the whole plumage, except the head and neck, is grey, and each feather is pencilled with black.

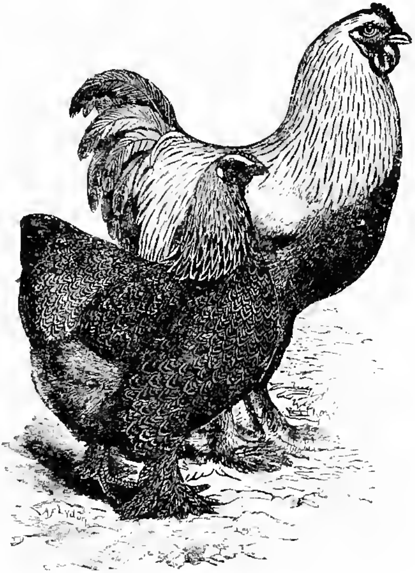

FIG. 31. DARK BRAHMAS.

During the last few years Brahmas have greatly degenerated.

Thirty years ago they ranked as the best layers in the country, especially during the winter months. The same cannot be said of them to-day. Yet there are many good layers to be found among them. Different strains of this breed greatly differ in their laying qualities. Some are among the worst layers that can be found anywhere, while others are the very reverse. As a rule, Light Brahmas will be found far better than the Dark. The eggs are large-sized and brown-shelled. Brahmas are great eaters and frequent sitters They carry a great deal of flesh on them, but, unfortunately, most of it is found on their legs, instead of on the breast; another point against them is that they have yellow skins. They are very hardy, quiet, and tame, and they can easily be confined in a small run. Fencing five feet high is sufficient to keep them in.

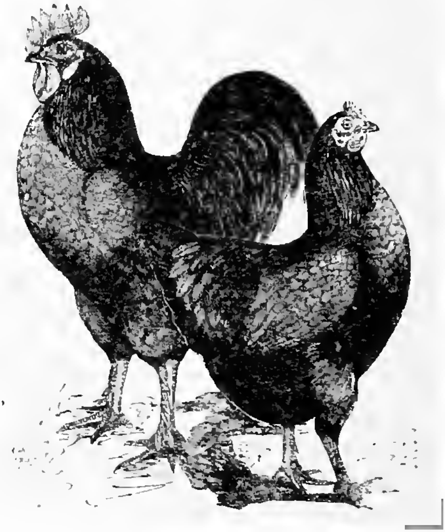

FIG. 32. LANGSHANS.

LANGSHANS.—In 1872 Langshans were exhibited for the first time in this country by Major Croad, at the Crystal Palace Show. Many visitors to the show said they were Black Cochins, so, says Miss Croad, "we, supposing the Langshan must have appeared in England under that name, had no hesitation in exhibiting a few birds in the Black Cochin class at the Crystal Palace in 1873. 'What's in a name?' We, however, soon found there was a great deal in a name." There quickly arose a controversy that was carried on with great bitterness for some years on the question as to whether Langshans came from the same stock as Black Cochins or whether they were a distinct breed. The controversy has practically ceased now, and it is on all hands admitted that whether Langshans were originally distinct from Black Cochins or not, they are quite different now, and they possess many useful qualities that Cochins altogether lack.

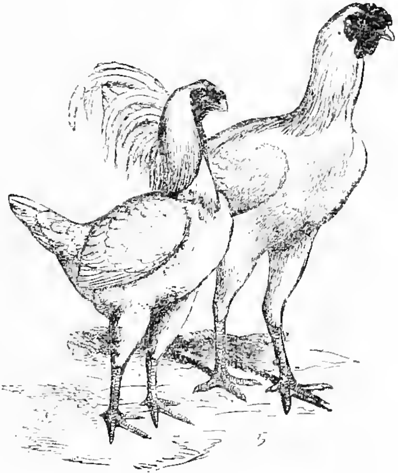

FIG. 33. MALAYS.

In spite of all controversy, Langshans quickly became very popular. In outward appearance they are more upright and far more active-looking than Cochins. Their plumage is black throughout, and the feathers have a very glossy sheen. The comb is single, evenly serrated, of fine texture, and rather small in size. The legs are dark pencil, but they become lighter as the birds grow older. A fair weight for good specimens is nine pounds for cocks, seven-and-a-half pounds for cockerels, seven pounds for hens, and six pounds for pullets. These weights are often exceeded, and the first English standard placed the weight for cocks at ten pounds: this was, however, found too much, and is now reduced, for, if Langshans are bred too large, they lose many of their good points.

As an all-round useful fowl, the Langshan deservedly occupies a very high place. It is a good layer, especially in the winter months; its eggs, though not very large, are brown-shelled and of a remarkably rich flavour. But for their having black legs, Langshans would rank high as table fowls; they have an abundance of flesh, of good quality and fine flavour. The hens are frequent sitters, though not so bad in this respect as Cochins; but once they come on to sit, they are not easily put off, and sometimes if not allowed to sit when they want to, they will die. They are very tame, and are easily confined in small runs.

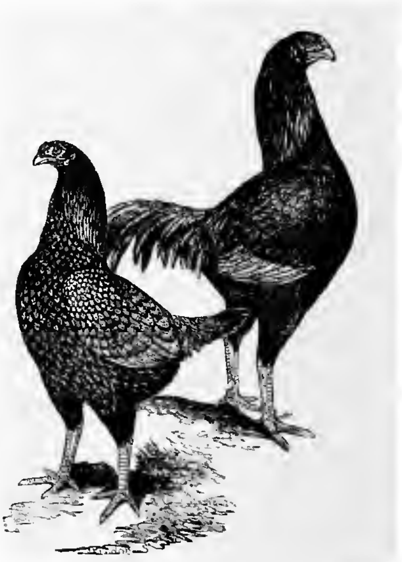
FIG. 34. INDIAN GAMF.

MALAYS. — Malays tower far above the ordinary denizens of the poultry-yard in size and height. They are remarkably upright, and the cocks often reach a height of close on two feet six inches. Consequently they are able to tyrannise over other fowls and bully them; and, unfortunately, they do not hesitate to take advantage of their power. They are great fighters, and this makes them hardly suitable for keeping in an ordinary poultry yard. The sole economic quality they possess is that they are excellent table birds; and a cross of Malay blood will greatly improve almost any breed in edibility. Malays are poor layers, and as chickens they are not over hardy; but they become very strong when they reach maturity. Male birds will often weigh from eight to eleven pounds, and hens from five-and-a-half to nine pounds. There is no established colour for the plumage of this breed; it is allowed to be almost any shade.

INDIAN GAME.—In carriage and general appearance the Indian Game bears a certain resemblance to the Malay. Like it, it is remarkably upright, and carries its head very high; and like it, it is intensely pugnacious. Hens of this breed differ somewhat in their laying qualities, but on the whole they do not rank very high in this respect though they give more eggs than Malays. They are splendid table-birds, with deep breasts and well-flavoured flesh. A fair weight for cocks is from eight to eleven pounds, and for hens, from five to nine pounds. Indian Game require a certain amount of liberty, and they will not thrive so well as many other breeds in confinement.

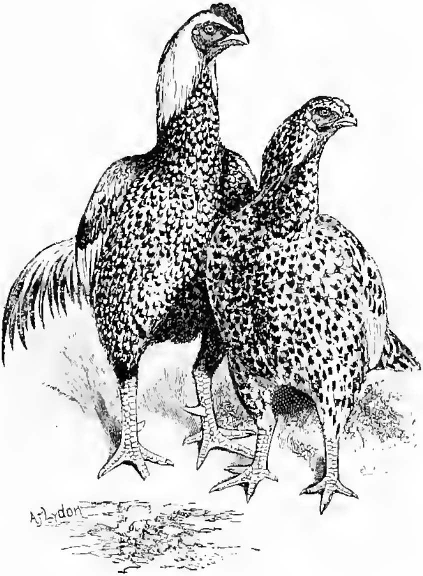

FIG. 35. ASEEL.

ASEEL.—Aseel are said to be the true Indian Game, while the variety that goes by that name in this country has been worked up by our home fanciers. The chief differences between Aseel and Indian Game is that the former are shorter in the leg, and far smaller; nor are they such good layers as Indian Game. The colour of the plumage of Aseel is varied.

CHAPTER XIII.

AMERICAN BREEDS.

Americans are noted throughout the world for their love of utility, and it is not surprising that they have carried this business-like characteristic into their poultry-keeping. The various breeds they have given us are distinguished for their all-round, useful qualities; and their popularity all over England shows that we have not been backward in appreciating them.

DOMINIQUES.—The Dominique is the oldest American breed, and, although it has never become very popular in this country, it has been extremely useful in forming a basis out of which newer and better breeds have arisen. It resembles the Plymouth Rock in plumage, and has a large rose comb, a yellow beak, and yellow legs. It is a fairly good all-round fowl, being hardy, a good layer, a moderate sitter, and a fair table-bird. Its yellow legs are against it for edible purposes.

PLYMOUTH ROCKS.—The name "Plymouth Rock" was first given to a breed made up by Dr. Bennett, a well-known American fancier, about forty years ago, but the variety that at present bears the name is altogether different from these. Dr. Bennett's "Rocks" proved a failure, and soon dropped out of sight.

The present Plymouth Rocks were originally made from a cross between Dominiques, Black Javas, and Cochins. Other crosses were also used, and the breed as it is at present was gradually evolved. One point, the yellow skin, might have been bred-out if the breed had been made in England, but, strange to say, while in England yellow skins are looked upon as in the highest degree objectionable in table birds, they are regarded in America as a good point and one that should be sought for. In making up the Plymouth Rock our cousins on the other side of the Atlantic, with that common sense that is so prominent a characteristic of theirs, did not aim at producing merely a fancy fowl, of good shape and nice to look at. What they wanted was a really useful "all-round" bird, that would possess as many virtues and as few faults as possible. It may be safely said that they very nearly obtained what they wanted. As an American writer has put it, they have, in the birds of this breed, "a massive frame, robust constitution, well-balanced organism, good flesh, splendid laying qualities prepotent powers, great individuality, noble carriage, sound plumage, invincible colour, remarkable hardiness and domestic habits."

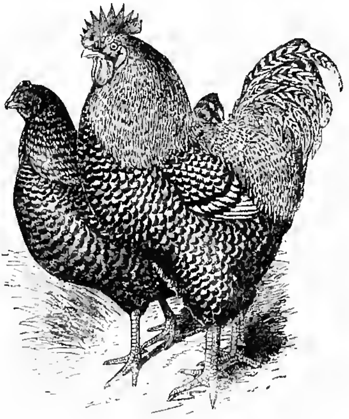

FIG. 36. PLYMOUTH ROCKS.

The plumage of the Plymouth Rock is what is known as "cuckoo-coloured." Each of the feathers is regularly striped with bars of bluish-black and of light grey. There is a strong tendency in the birds to hatch-out either too light or too dark. Some Rock chickens are quite black, while others are almost white. The only way to avoid this is to mate the breeding stock properly. If the hens are of too light a colour, a cock should be chosen that is rather dark, or *vice versâ*. The legs are bright yellow in colour, and free from feathers, and the comb is small and single.

Rocks have plenty of good-flavoured flesh, and they mature early. They are sometimes bred to a great size, cocks having been known to weigh over eleven pounds and hens over nine. The average weight, however, is far less than this, and it is unwise to attempt to obtain birds of such an excessive size. Some breeders nowadays seem to forget the law of nature, that, as quantity increases, quality decreases. A neat, well-shaped bird, of a moderate size, is in every way better than an excessively large one. It lays a fair number of brown-shelled eggs of a good size. It is very hardy, a moderate sitter, and a first-class mother.

To meet the prevailing demand a buff variety of Plymouth Rock has also been introduced, and bids fair to rival the original Barred type in point of popularity. The colour of these birds is of a sounder shade than in some of the other Buff breeds, a fact which is due to the Buff Rock having been longer in existence than, for instance, the Buff Orpington. White feathers do not crop up so frequently, although the black has not been bred out. The Buff Rock, too, has presumably not been produced by crossing various coloured birds, but probably owes much to the Cochin, the shape having been attained by careful breeding. The standard says that the plumage should be of a uniform shade, with tail of the same colour. The fatal defects are white in tail, black spots or stripes in hackles, mossy wings, or feathered legs. As layers, the variety are very hardy, like their Barred sisters, and give a splendid return in eggs for care expended upon them. They are profitable to breed for show purposes, as there is a great demand both for birds and eggs.

Some years ago a variety of white Plymouth Rocks was introduced in America, it being a "sport" from the old variety. In that country it has become exceedingly popular, but in England White Rocks are seldom met with. These birds resemble the Barred and Buff in all but the colour of their plumage. They are good layers, excellent table-fowls (barring the yellow legs and skin), and though accounted by some less hardy than their brothers and sisters of the other varieties, there is really little to chose between them. The reason why they are not extensively kept in this country is that we have so many older varieties that are quite as good, so that there is really no opening for them.

Yet another variety of the Plymouth Rock is the Black, that has presumably been produced from the Java, and that still shows a good deal of Rock character. The greatest difficulty in breeding Black Plymouth Rocks is in connection with the legs, many coming quite sooty instead of clear yellow, and even inclined to blackness. When bred true, nothing can excel them in point of beauty, the metallic sheen of the black plumage contrasting so vividly with the yellow legs and bright red face and comb. A gentleman who has kept all varieties of Plymouth Rocks says that Blacks are the most profitable for utility purposes. He declares that hens of this variety have laid through the severest winter, when others have with difficulty been kept alive. Without a doubt the Black Plymouth Rock labours under the same disadvantage as the White, in that there is no room for so many new varieties and breeds. As some of the older breeds die off, however—as they probably will in course of time—the Black Rock should come forward to take a prominent place.

LEGHORNS.—It may be asked if it is correct to place Leghorns in a chapter devoted to American breeds, for undoubtedly they originally came from Italy. But it was in America that the breed was improved and worked up to its present condition, and so it has been thought advisable to describe it along with the American breeds.

It is now over fifty years since a few birds were taken to a fancier in New York from Italy. A few American breeders took the birds up, and soon saw what valuable qualities they possessed. More birds followed: these were improved and properly bred, and about twenty years ago consignments of them were sent over to England. To-day Leghorns are probably the most popular non-sitting variety of fowls either in England or in America, and they well deserve their popularity. They are the best laying birds we have, are small eaters, and their hardiness is simply remarkable. It is sometimes said that their eggs are small, but while this may be the case with some strains of birds, it is not so with all. Personally I have found that the eggs of White Leghorns are far above the average size, and the experience of many others confirms that view. Mr. R. Fowler, in a lecture before the Farmer's Club, in May, 1885, said that he found the eggs of Leghorns the largest of any. Whereas a score of common eggs weighed only two pounds, a score of eggs laid by Leghorns weighed three pounds, one ounce.

Originally there were only two varieties of Leghorns—White and Brown. Now there are quite a number—White, Brown, Black, Duckwing, Cuckoo, Pile, and Buff, of which the White, Brown, and Buff are the most popular. In outward appearance they are remarkably upright and lively-looking. Their legs are bright yellow, and they have very large single combs. That of the cock stands upright, while that of the hen hangs over. The tail of the cock is extra large and flowing. Where there is plenty of space for them to roam, Leghorns are good foragers, but they will also adapt themselves to small town runs. In the latter, care must be taken to keep them well supplied with green food, or else they may take to feather-eating, a vice they are rather addicted to. They are not good table birds, on account of their small size and yellow skins. Good-sized birds will only weigh—cocks, six pounds, and hens, four pounds.

The White Leghorn is pure white, without a coloured feather in it. Its light plumage counts against it for town yards, owing to its liability to show the dirt, and in such a case the Brown Leghorn will be more suitable. The Cuckoo Leghorn resembles the Plymouth Rock in plumage, and it is hardly as good as the other kinds. The Pile Leghorn was made by Mr. G. Payne, by judiciously crossing the Browns and Whites. Mr. Perrot has also produced the same variety by means of crossing and introducing foreign blood. The Black Leghorn is said to be the primitive Italian stock, but it is very doubtful if this is correct,

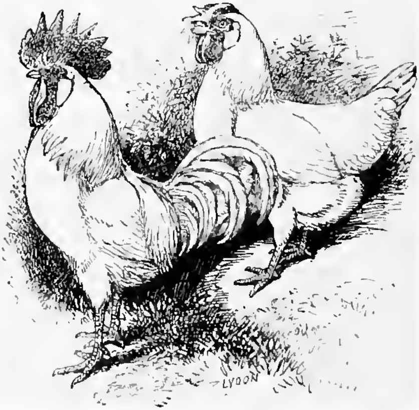

FIG. 37. LEGHORNS.

as more probably the honour belongs to the Brown. The Buff is another product drawn from the Cochins, and perfected by American breeders. It breeds fairly true, and has good utility qualities.

Undoubtedly the Leghorn deserves to be kept far more largely than it is. Those whose sole object is egg-production cannot find a better breed. The chickens hatch-out well, feather very quickly, and often lay before they are six months old. They will thrive in a town back-garden almost as well as in a farmyard, and for hardiness, virility, and prolificacy they stand unequalled.

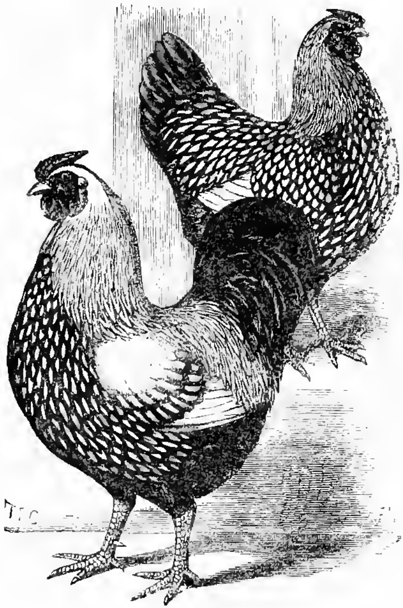

FIG. 38. WYANDOTTES.

WYANDOTTES.—Without exception this is the most successful and most popular breed of the century. Although one of the later American productions, it has made remarkable headway both in its own country and in England, so that it is held in even greater repute than its compatriots, the Plymouth Rocks. Looking to the origin, Mr. Fred. A. Hondlette, a well-known American fancier, relates how, in 1877, numbers of Silver Wyandottes were to be seen in the yards of various fanciers, though they were known by numerous names. It was not until 1883 that its career began to take a definite form, when a large number of the new birds were exhibited at Worcester, U.S.A., and on that occasion the executive committee invited several fanciers to suggest a name and a standard for the new breed. Mr. I. K. Felch had already drawn out a draft standard, and had proposed the name Hambletonian. Mr. Felch's standard was utilised to a certain extent, but the name, like the others suggested—Columbias, Ambrights, and Sebright Cochins—was rejected. The name Wyandotte, taken from a tribe of Huron Indians, was proposed by Mr. Hondlette, and accepted unanimously, and the Silver-laced was given a standard of its own as the first member of the great Wyandotte family.

Then followed the Gold-laced, with similar characteristics, except that the ground-colour was of a golden-brown shade instead of white. Both of these varieties rapidly became popular, and they were soon imported to England. Then came the White, which Mr. Hondlette claims to have originated about 1883. They were probably "sports" from the Silver-laced, and have made fair headway, though many fanciers consider there is little credit and pleasure in breeding pure white birds. In the same way came the Black; and then one of the next to make its appearance was the Violette, known in England as the Blue-laced. This bird resembles the Gold, with the exception that the feathers are laced with blue instead of black. When the boom for buff fowls was on, a Wyandotte of that colour made its appearance. It is now one of the most popular and widely kept, and is also accounted hardier and a better layer—if that can be—than the older varieties. Out of the Blue-laced was then evolved the most beautiful branch of the Wyandotte family—the Buff-laced. It was, in point of fact, a "sport" from the Blues, and its charm lies in its well-laced body, the ground-colour being buff, finely laced with white. As yet it has been difficult to breed true, as in the case of all new varieties; but when this difficulty is overcome it is bound to become one of the most popular members of its family. Moreover, it is one of the best, if not the best, layer, this quality being most pronounced. Another very charming variety is the Partridge, known in America as the Golden-pencilled. The plumage is similar to that of the Partridge Cochin, from which breed it has been derived, and though considerable difficulty has been met with in breeding-out the feathered legs and other characteristics of the latter breed, the variety is well on the way to popularity. Allied to this is the Silver-pencilled, which has similar characteristics, but which has been produced from the Dark Brahma, and favours that breed in colour and style of plumage. Neither of these are claimed to be such good layers as those that have gone before, having been bred solely for show purposes. Finally, we have the Cuckoo, which closely resembles the Dominique, and is, in fact, a Rose-combed Plymouth Rock bred to Wyandotte shape. It is the least popular variety of all, the imitation being much too palpable. It is a good layer, however, and a useful bird, the only objection being that it is uncalled for and unnecessary.

There can be no question as to the economic merits of the Wyandotte. It is remarkably hardy, a good table bird, a good sitter and mother, an active forager, and an excellent layer. The average weight of the cocks is eight or nine pounds, and that of the hens six or seven pounds. Mrs. E. Oliver, in the *Live Stock Journal,* July 6th, 1888, says that she gave up all other breeds for the Wyandotte, because: 1. She found Wyandotte chickens fit for the table three weeks before Houdans, and six weeks before Langshans and Brahma-Dorkings. 2. From April 1st to October 1st, she found her Wyandottes gave 14 per cent. more eggs than Brahma-Dorkings, 12 per cent. more than Langshans, and 12 per cent. less than Houdans. From October 1st to April 1st, they gave 94 per cent. more than Houdans, 82 per cent. more than Brahma-Dorkings, and 46 per cent. more than Langshans.

JAVAS.—The Java is evidently an old American breed, and it has been used in making up some of the newer varieties. More than one attempt has been made to introduce it into this country, but, so far, breeders have not taken to it at all. Two or three years ago it seemed as if it was about to be taken up in earnest, but just then the Orpington came to the front and took its place. In many respects the Orpington and Java bear a striking resemblance to each other, and the one was very likely used in helping to make up the other. There are three varieties of Javas—Black, Mottled and White. The Black Java is the oldest and best known. Mottled Javas were obtained by crossing a black cock with a white hen of unknown parentage; while the White variety is said to have originated by a sport from the Blacks. They are all about equal to each other in economic qualities. According to American descriptions they are hardy, and good winter layers of fair-sized, slightly-tinted eggs; they are rather inclined to be broody, and make somewhat clumsy mothers, on account of their large size; but they are very attentive and faithful to their charges. They make good table birds, as their flesh is well flavoured and juicy; in this respect the White variety is slightly superior to the others. In shape they somewhat resemble the Plymouth Rocks, but their back and body is longer, and their tail fuller.

VARIOUS.—The Americans have produced a greater number of breeds of poultry than any other nation, even including those clever adapters the Chinese. Many of these breeds, however, that have become popular in their own country, have never reached our shores, so that it is only necessary to cursorily review them, always remembering that in all probability they will some day come among us. A favourite American breed at the present day are the Rhode Island Reds. These birds are said to have originated at least twenty years ago, and were introduced by people who had in view the object of producing, at least expense, eggs and dressed poultry that would give the best returns. Mr. Samuel Cushman, who was mainly responsible for the new breed, says that a combination of the heavy Asiatic and lighter egg-producing breeds was not entirely satisfactory, and it was not until after the infusion of Red Game blood that the long, full breasts, short legs, and plump bodies that now distinguish the Rhode Island Reds were secured. The White Wonder is another breed that appears to be popular with the American poultry-keepers, and in appearance it so resembles the English Albion that further comment is unnecessary. Klondyke fowls are a cross between the Japanese Silky and the White Leghorn, and have the characteristics of the former breed to a great extent, whilst being good layers. They have been kept in England by Mrs. W. B. Goode, Boroughbridge, Yorks, but have not given satisfaction.

Other varieties have been manufactured and introduced from time to time. Moreover, the Americans are not averse to adding varieties to what are strictly English, Asiatic, or Spanish breeds. As a people they are even keener upon the subject of poultry-keeping than the English. They make it more of an industry and less of a hobby, ever working for better results in the way of laying and table birds; so that, knowing as they do what is really required, it is little wonder that such breeds as Plymouth Rocks and Wyandottes, Leghorns and Rhode Island Reds, have become so popular. At the present time, those breeds stand at the head of utility poultry, a lasting memorial to the skill and the general practical ability of the American poultry-keepers. The one drawback, from our English point of view, is the yellow legs affected on the other side of the water. Whether they will become general among British table-poultry is doubtful, although we are continually being told that the flesh of the birds is equally as good as of those that have white legs.

CHAPTER XIV.

BANTAMS.

The subject has often been discussed whether the Bantam is a creature of Nature's own making, or the product of man's handiwork. Theories have been adduced to the effect that the species originated in the district of Bantam, in Java; but beyond the fact that the Asiatic people have shown great skill in manufacturing breeds of poultry, there is nothing to bear out the assumption. On the other hand, we know that many varieties of Bantams have been introduced by fanciers of our own times, and it appears, from all reports, that dwarfing has long been a fine art by many races, and notably the Chinese. This is quite sufficient to strengthen the belief—which, indeed, is almost a certainty—that Bantams are the product of man's own hands, and have, apparently, no connection with the district of the same name.

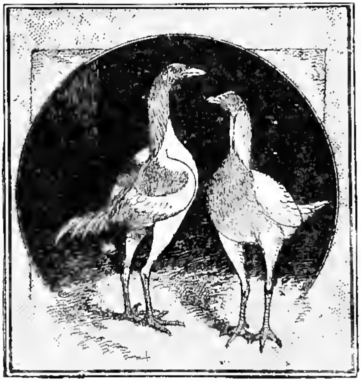
FIG. 39. PILE GAME BANTAMS.

The Bantam is pre-eminently a show fowl. It has been bred and inbred with infinite care for show purposes, and, naturally, what utility qualities the birds possess, must have been saved from the wreck of their former selves, or cultivated of late years. As pets, the midget fowls have become immensely popular, especially among ladies and children. As fancy birds they have a large following, and great prices have been made of some of the best specimens.

GAME BANTAMS.—These smart little birds, that appear to be the essence of vitality, are really Game fowl dwarfed to Bantam size. There are the various colours of Old English and Modern, as well as Indian Game, Aseel, and Malays, which may for this purpose be classed in the same category. In each case the Bantam is the larger fowl on a dwarfed scale, so that a detailed description is quite unnecessary. The chief characteristic of the Game Bantam—as, indeed, it is of all Bantams—

is minuteness. They should be as small as possible, with typical Game reach, length of leg, shape, and other characteristics.

ROSECOMB BANTAMS.—One of the smartest and neatest little fowls extant. The Rosecomb is practically a small Hamburgh, with the carriage and grace of that breed developed just as the size is diminished. There are two varieties, Black and White, the former being the most popular. It is a grand, pompous little bird, with tiny yet shapely body, and plumage of a sheeny black. The comb is of the true Hamburgh type, with lobes of clear and sound white. In the cock the sickle feathers are an important feature, being large and very rich in colour. The White variety is exactly similar in all points, except that the plumage is white instead of black. These tiny fowls are good layers and hardy, not by any means difficult to breed, and stand out, perhaps, as the most useful of the Bantam breeds.

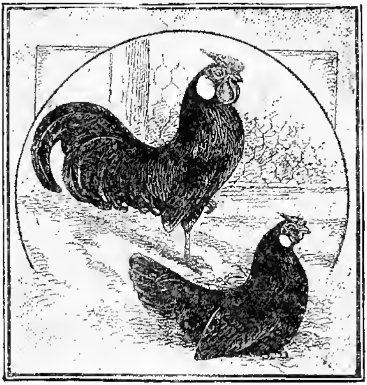

FIG. 40. BLACK ROSECOMB BANTAMS.

SEBRIGHT BANTAMS.—These birds are particularly striking, from the fact that the cocks are devoid of the hackle, tail, and saddle-feathers peculiar to their sex; but, with the exception of a stronger and larger tail, are similar to the hens in plumage. The process of their manufacture was begun in the year 1800 by the late Sir John Sebright, who, wishing to produce a Bantam with plumage similar to that of the old-time Polish fowls, and with "henny" hackle and tail in the cock, began by crossing Polish fowl with common Bantams, later introducing a hen-tailed Bantam cock that he picked up in his travels. The breed took many years to perfect, and the beautiful level lacing we see nowadays was scarcely realised by the introducer himself. There are two varieties, Golden and Silver. In the former the ground-colour is of a rich golden-yellow, and in the latter pure white. In each case the feathers are finely and evenly laced with black. The comb is of the rose shape, more like that of the Wyandotte than that of the Hamburgh, and the lobes and face are red, and legs slaty-blue. The appearance is very quaint, with wings carried low, and head very erect. They are good layers, and except in the case of some strains that have been inbred considerably, the chicks are easy to rear.

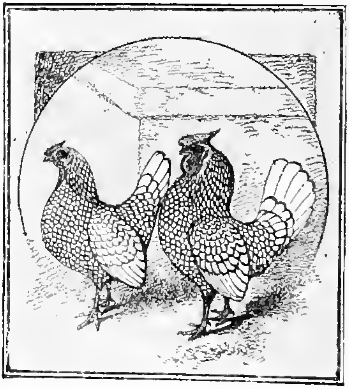

FIG. 41. SEBRIGHT BANTAMS.

PEKIN BANTAMS.—These fowls, sometimes called Nankin and at other times Cochin Bantams, are veritably dwarfed Cochins. They were produced from the Cochins by the Chinese themselves, and were discovered and introduced to this country when the Summer Palace at Pekin was sacked during the Anglo-French expedition, in 1860. Having been dwarfed from large fowls, they are hardly as small as other Bantam breeds, but English fanciers have done much to improve them in this respect. We have all the colours just the same as in the Cochin—Buff, Partridge, White, and Black, and in each case the appearance is similar, except that the Bantam, being so much smaller, appears to be more heavily feathered. They are suitable for keeping in gardens and small runs, as they take little exercise, and, being encumbered with so much leg- and foot-feathering, they are unable to scratch as other breeds do. Like the Cochin, they are fair layers in winter, and very hardy.

JAPANESE BANTAMS.—A breed that has been introduced from Japan, and that has met with some favour in this country. In appearance the birds are exceedingly pompous, having a well-shaped body on short, yellow legs, with an immense tail in the case of the cock, which nearly touches the large single comb. The varieties usually met with are the White-and-black-tailed, that have white bodies and black tails tipped with white, and the Grey or Mottled, that have plumage similar to that of the Ancona. The Japanese are favourites of the Princess of Wales, and though they cannot be classed as good layers, they are likely to become more and more popular. They remind one more of a fantail pigeon than anything, and their legs are so short that they often appear to almost touch the ground with their bodies.

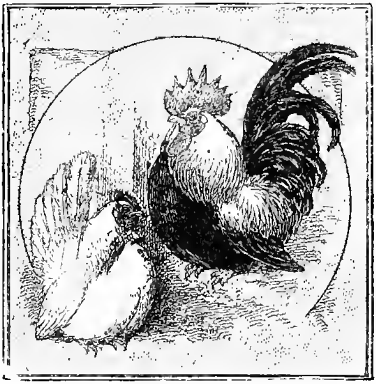

FIG. 42. JAPANESE BANTAMS.

BRAHMA BANTAMS.—This breed is seldom met with, and has not yet been sufficiently reduced in size. It has been produced from the large Brahma fowl, and the two varieties, Light and Dark, are similar to those of the larger breed in every respect.

BOOTED BANTAMS.—A decidedly pretty breed, the chief characteristic of which is the immense foot-feathering, which resembles great flat boots upon the bird. Whites are generally met with, but Blacks have been bred. The comb is single, lobes and face red, wings large and drooping, and legs vulture-hocked and heavily feathered to the feet. Some varieties have also bibs and muffs, giving a very quaint, pretty appearance. Like the Pekins, these birds are suitable to the lawn or garden, as they are quite unable to scratch. They are very fair layers, and hardy in all weathers.

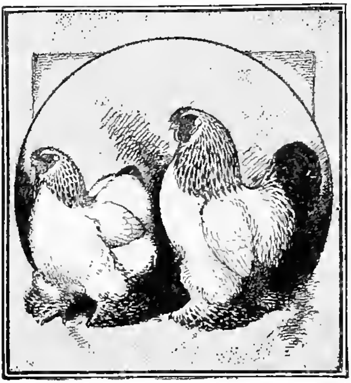

FIG. 43. BRAHMA BANTAMS.

VARIOUS.—Among the breeds that have been subjected to the skill of the dwarfing artist are Andalusians, which need many years yet to be perfected, both in size and colour. A pretty breed, and one favoured in some parts, is the Cuckoo, being an exact imitation in miniature of the Scotch Grey, with cuckoo plumage and mottled white legs. Frizzles are often met with, their peculiar characteristic being the curious turned-up or frizzled plumage, the colours being white, black, and a pale brown. Polish Bantams are seldom met with, although they are very beautiful; some being black with white crests, others spangled all over like the Houdan, and still more buff laced, or white, with beautiful rounded crests. In the course of time we shall probably have dwarfed specimens of all the breeds of poultry; but for the present the above include all that are yet known.

SILKIES.—According to the standard which has been issued by the Silky Club, it is incorrect to

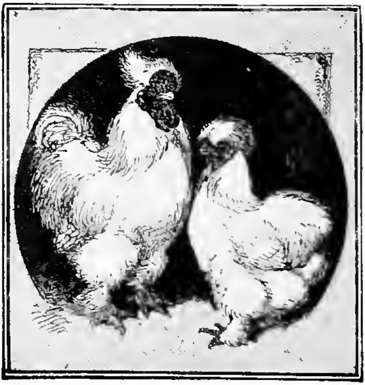

FIG. 44. SILKIES.

class these picturesque birds as Bantams, since they are really a useful breed, and should be bred larger instead of being dwarfed. We are told they are of Eastern origin and very old. The colour of the skin, comb, and face is mulberry-purple, thus giving rise to the name of Negro Fowls. But it is the plumage that is even more remarkable, being of a fine silky texture, giving the birds the appearance of balls of silken fluff. They have small crests and moderate feathering on the legs. They are fair layers, and the best sitters and mothers that can be obtained. They are used all over the country for hatching pheasants, Bantams, and even large poultry, and for that purpose are being bred larger.

CHAPTER XV.

POULTRY-FARMING.

Poultry-farming is a business that seems to have an immense attraction for persons of the most diverse dispositions and varied stations in life. The young man of delicate health and rural tastes, the bankrupt tradesman, the poor lady, and the professional man or merchant who finds the strain of town-life too much for his health—all think that in poultry-farming they will find a healthy, profitable, suitable employment. Such people usually know next to nothing of practical poultry-farming; what little they do know being learned from books, or by keeping three or four birds in a small back-yard. Most magazine or newspaper articles on this subject are, it must be said, very delusive; and more than one instance has occurred of people rushing into poultry-farming and losing a considerable amount of money through reading a glowing newspaper account of the profits that are to be made by it.

Can poultry-farming possibly be made to pay? This question is being continually asked, and frequently it is answered in the negative. Many writers, disgusted with the extreme statements made about the profits to be obtained from fowls, have gone to the opposite extreme and declared that poultry-farms never have paid in this country, and are never likely to. This is an exaggeration, for while about 90 per cent. of those that have been started have proved failures, there are some that pay very well.

It is said that figures can prove anything, and certainly nothing is easier than to prove, *on paper*, either that one can make a fortune out of fowls, or that to keep them is a short cut to the Bankruptcy Court. Take the following example: A writer in an agricultural paper who was of opinion that poultry-farming did not pay, prepared an imaginary balance-sheet some time back in order to prove that his opinion was correct. He calculated what would be the result of a venture on a five-acre farm, with a stock of five hundred birds. The work was supposed to be done by the owner and a hired boy, and there was a capital of £100 to commence with.

Dr.	£	s.	d.	*Cr.*	£	s.	d.
500 hens at 3s. each	75	0	0	50,000 eggs sold at 1d. each	208	6	8
Rent, say	25	0	0	500 hens at 3s. each	75	0	0
Interest on money laid out	5	0	0		283	6	8
Food at 6s. 6d. per hen per annum	162	10	0	Debit loss	7	3	4
Boy's wages, say	20	0	0				
Loss from accident and disease, say	3	0	0				
Total	£290	10	0		£290	10	0

This looks very discouraging. But now let us prepare another balance-sheet, according to the estimate of those favourable to poultry-keeping, and see what a different result it shows.

Dr.	£	s.	d.	*Cr.*	£	s.	d.
500 hens at 3s. each	75	0	0	67,500 eggs at 1¼d. each	351	11	3
Rent, say	25	0	0	Manure at 1s. per bird per annum	25	0	0
Interest on money laid out	5	0	0	500 hens at 3s. each (stock)	75	0	0
Food at 6s. per annum for each hen	150	0	0		451	11	3
Boy's wages, say	20	0	0	Subtract expenses	278	0	0
Loss from accident and disease, say	3	0	0				
Total	£278	0	0	Leaving a profit of	£173	11	3

These imaginary balance-sheets may be taken as an illustration of the old adage that it is easy enough to obtain statistics to prove the truth of your opinions. In actual work it is probable that neither of these estimates would work out correctly, but the veritable result would be somewhere between the two.

Even particulars given of what are said to be actual poultry farms are often in the highest degree absurd. The following, which appeared in a popular weekly journal about a couple of years ago, is perhaps as fanciful an account as has ever been written:

"A friend has set down for me the following estimate of two years' receipts and expenses of a poultry farm of sixty acres, situated on a gravel soil within driving distance of London:

"EXPENSES.—First year: Rent, &c., £120; incubators and plant, £200; eggs, £10; wages, £75; grain, &c., £25; carriage, &c., £20; miscellaneous, £25; total, £475. Second year: Rent, &c., £120; increased plant, £100; wages, £150; grain, &c., £200; carriage, £75; miscellaneous, £50; total, £695. Grand total of expenses for two years, £1,170.

"RECEIPTS.—First year: 300 eggs a day for sixty days, at one penny each, £75; 500 fowls at 1s. 6d. each, say £37; total £112, Second year: 1,000 eggs for 200 days, at one penny each, say, £833; 2,500 eggs a day for 165 days, at one penny each, say, £1,718; 1,500 fowls at 1s. 6d. each, say, £112; total £2,663. Grand total of receipts for two years, £2,775.

"If this estimate be approximately correct—and I have every reason to believe that it is—a man with, say, £500 or £600 capital and the necessary energy and care, should be able to make in two years a profit of about £1,600, and should afterwards make from £1,500 to £1,800 a year, keeping not more than 3,000 fowls at one time."

How very delightful! Truly, here is a fortune within everyone's reach! At least, so a reader who does not know anything about poultry-keeping might think; but to any person who understands the A B C of the subject this article appears to be the acme of wild, foolish, ignorant accounts. Take one point alone. According to this statement, in the second year of the farm's existence about three thousand birds were kept for laying purposes, and fifteen hundred were reared for the table. Yet the food bill is only given as amounting to £200. In actual work it would be found that the food bill for such a number of birds would cost considerably over a thousand pounds. This one item may be taken as an instance of the reliability of the whole.

It is a general rule in actual poultry-farming that the greater the number of birds kept, the lower is the rate of profit that can be obtained from them. A breeder often calculates that because he makes fifty pounds a year by keeping two hundred and fifty fowls, he will be able to make four hundred pounds a year by keeping two thousand. This is a mistake, as those who try to carry it out will quickly find. A small number of birds can be far better attended to than a large number; there is less liability of infectious disease breaking out among them, their eggs usually realise a better price, and so they yield better profits. It is simply folly for people who are desirous of starting poultry-farming to commence by purchasing a large number of birds, and trying to carry on the business on a large scale. They should start in a very small way, purchase but very few birds, and those only of first-class quality. The situation chosen for the farm should be light, dry, and sheltered, and not under five acres in extent. It should also be within a reasonable distance of a good market or a railway station. The best time to commence work is in the spring, and the first thing to be done is to obtain either some sitting hens or incubators. Instead of purchasing a number of adult birds the breeder ought to obtain a pen or two of birds of a suitable breed that will supply him with sufficient eggs for hatching purposes. By incubating as many eggs as possible, he will have by the autumn a number of chickens of his own rearing. The following spring he can breed from his own birds on a larger scale, and so year after year he can increase his stock to as great an extent as he may find necessary. Selection of stock must of course be strictly carried on, for on the character of the birds kept will depend, in a very large measure, the success or failure of the enterprise.

Such a plan as this will be found far better than commencing on a large scale. The owner will have time to learn all the ins and outs of the business, he will gradually acquire a market for his wares, and he will stand in every way a better chance of succeeding.

In spite of the fact that we have to import some hundreds of millions of eggs from abroad every year to meet the home demand, it is often a difficult matter to obtain a profitable market for eggs and poultry. The home producer will do well not to attempt to compete with the very cheap foreign supplies, but to strive to obtain a better class of customers, those who are willing to pay a fair price for really new-laid eggs. It is hardly necessary to say that this class of customers must have good articles. The eggs must be sent off to them the same day that they are laid, they must be of a fair size, and they are liked better if somewhat tinted. A good way of obtaining such customers is to advertise in the papers offering to supply new-laid eggs, carriage paid, at certain rates. But daily newspapers are not a good medium for such advertisements.

It will generally be found best to keep several different breeds on a poultry-farm of any size, and not to confine oneself to a single branch of poultry-keeping. Under ordinary circumstances the most profitable part of the business will be the sale of pure-bred stock, and of eggs for sitting; but at the same time table poultry and eggs for ordinary consumption ought to be sold. The aim should be to supply the market with eggs and poultry at the time of year when they are most scarce, and command the highest price. Eggs can be readily sold in the autumn for twopence each, ducklings will command a high price early in the year, and early chickens can be sold for twice as much as late ones. In poultry-farming, as in everything else, character tells. If a man gets a name for supplying first-class articles, his business will increase; while if he does not keep his word, if he indulges in "tricks of the trade"—selling stale eggs for fresh ones, old fowls for spring chickens, or diseased birds for healthy—his customers will quickly get to know his ways, and will leave him for someone else they can rely on. "Honesty is the best policy," even in poultry-farming.

Where only a couple of breeds are kept, one of them should be a sitting variety, and the other a non-sitting. Of the sitting varieties the most suitable are Langshans, Wyandottes, and Orpingtons, while the most suitable non-sitters are Leghorns and Minorcas.

In any farm where the birds cannot have an unlimited range, but have to be confined to runs by wire netting or poultry hurdles, all except the heavy varieties will probably require to have their powers of flight lessened. For mere farm birds—producers of meat and eggs for food—clipping *one* wing will suffice, but for show birds, a wing-lock such as we have previously mentioned will be found useful. A wing-lock consists of a piece of steel chain, a swivel, and a shoulder-piece of leather. The steel chain is placed round the feathers of one wing, the leather bit is placed over the shoulder-joint, and they can be fastened together with any required degree of tightness, rendering it impossible for the bird to fly.

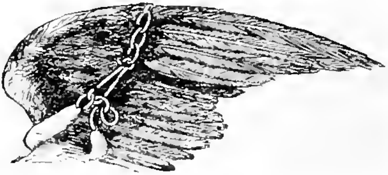

FIG. 45. WING-LOCK.

Writing to the "Fancier's Gazette" on this subject, Mr. Mander Allender, the managing director of the Aylesbury Dairy Company, said: "We keep about one thousand head of poultry. For eggs we decidedly prefer Langshans. They are good winter layers, they are hardy, and their eggs, although not quite so large as those obtained from the Spanish breeds, Minorcas, and Andalusians, &c., have the merit of being of the beautiful rich brown so acceptable on the breakfast-table. We keep Langshans, Minorcas, Dark Dorkings, and Silver Dorkings as our main breeds.

"We have also, in smaller numbers, black-breasted Red Game, Black Game, and Duckwing Game and Silver Dorking crossed. The first we are now getting nearly all white legged; the last make a most excellent table-fowl. To enable us to obtain an assured supply of eggs for sitting, we make up fourteen breeding-pens—four of Langshans, three Minorcas, three Dark Dorkings, two Silver Dorkings, and one each of the game breeds. We keep the bulk of our birds in lots of from fifty to eighty, distributed about the different sets of buildings and other convenient spots."

Mr. Reynvaan says that the White Leghorn is by far the most profitable breed he keeps. Wyandottes are his favourites among the sitting breeds, and Langshans would be equally good, only they want to sit too frequently. Brahmas, Cochins, Spanish, Game, and Dorkings he found, after several years of trial, to be unprofitable, and so he gave them up.

While thus describing the way to set about poultry-farming, I must not be understood to recommend it as a business to those who do not understand it. The risks are very great, the stock is liable to infectious diseases, and the profits have to be collected from large numbers of birds in small amounts. Those who contemplate starting a poultry-farm, will find it best not to rely solely upon the returns from their hens, but to have more than one string to their bow, and while making poultry their chief stock, to have at the same time some cows and pigs, and to combine poultry-keeping with fruit-growing.

It may be added the successful poultry farms are probably mainly indebted for their success to "fancy," as distinguished from "useful," poultry, the eggs and birds of which realize fancy prices (birds from five shillings to thirty shillings each, and eggs from three-and-sixpence to fifteen shillings a dozen) instead of the starvation prices which ordinary table-poultry and eggs fetch.

CHAPTER XVI.

TABLE-POULTRY.

THE art of raising first-class table poultry is but little understood in this country, except in the counties of Surrey and Sussex. There the people pay great attention to it, and Surrey chickens are famed all over the world for their exquisite flavour and excellent quality. The raisers of the birds only keep them until they have grown a fair size; then they are bought up by higglers, who have certain rounds in the country. The people know when they can expect the higglers round, and have their birds ready accordingly. When they are purchased they are taken to a fattening establishment, of which there are several in Surrey, and Sussex the leading being round about Heathfield.

At the stuffer's, each bird is placed in a separate coop, where it has hardly room to move and it is taken out twice a day to be stuffed by machinery. The food generally used is ground oats and finely-cut suet, made into a semi-liquid state with milk. The fattening apparatus resembles a sausage machine in shape, having an indiarubber pipe at one end. The nozzle of this is placed in the bird's throat, one person holding the fowl while another turns the handle, and the food is forced through the pipe into the bird's crop, until the operators think it has had enough. Machines are now made which one person can operate alone, without any assistance, holding the bird in his hands, and forcing the food into the pipe by means of a treadle, which he works with his foot. This is repeated twice a day for two or three weeks, and then the fowl is in a fine, plump condition, and fit for market. It must be remembered that it is almost solely fat that is made by this process, and not flesh.

Stuffing is carried on to a far greater extent in France than in this country. The chief food used there is buckwheat-meal mixed with milk; cramming by hand is also largely practised. In the

Paris markets it is no uncommon thing to see the country people feed the birds they have brought in with them by *mouth!* The peasant fills his or her mouth with semi-liquid food, places the beak of the bird into it, and squirts the food down its throat. In cramming by hand the food is made into a stiff paste, cut into thin, round strips, each strip dipped into water, and then forced down the bird's throat. According to a French Government return on this subject, the fowls seem positively to enjoy the process of being stuffed!

Although I have described these methods, I certainly do not recommend my readers to adopt them. They seem to most of us a wee bit cruel; or, if not that, very repelling; and they are also very difficult for any one but an experienced hand to do successfully. When amateurs try to keep their birds in small coops and to stuff them, the result usually is that the poor things pine away, and, instead of becoming fat, they lose flesh. There is one way, however, that almost anyone can adopt.

The first requirement is good chickens, that have been well fed from the day they left the shell; all the fattening in the world will not do any good to half-starved, weakly birds. Then there must be a small covered run in which the chickens can be kept. About two or three weeks before they are required for killing place them in this. The run must be warm and dry, and it is better for a portion of it to be kept dark. The birds can be kept in this dark portion for a few hours every day, and they will naturally sleep the greater part of the time they are there. "Sleep and grow fat," is a proverb that applies to animals as well as to men. Absolute cleanliness is most necessary, and a constant supply of fresh water must be placed where the birds can always get at it. They will require three meals a day, the first to be given as early in the morning as possible, say about six or seven o'clock, the second about noon, and the third an hour before sunset. The best foods for fattening are either ground oats or buckwheat-meal. Any rough fat, especially suet, may be mixed with this, and if it can be mixed with milk the birds will fatten more quickly. Some green food must also be provided. The birds must be allowed to eat their fill at each meal, but no food ought to be left about between meals. In two or three weeks the birds will be large enough, and then they must be killed at once. If they pine before they are sufficiently fat, it will do no good keeping them any longer.

On the whole the best way to kill a fowl is to sever its windpipe by a quick cut from a sharp knife. Another way is to thrust the knife through the roof of the mouth into the brain. The plucking should be done immediately after death, as the feathers then come off much easier than when the bird is cold.

CHAPTER XVII.

DUCKS.

There can be no question but that duck-rearing is one of the easiest and most profitable branches of poultry-keeping. Ducks are so hardy that, with ordinary care, none need be lost through disease ; they require but little attention, and they have in a marked degree the power of adapting themselves to their circumstances.

Although ducks are water-fowls, it is possible to keep them where they have very little water to swim in, and they will thrive even where they have nothing more than a fair sized tub of water for their use. But under such circumstances it is not safe to use their eggs for hatching purposes, as a large proportion of them are very likely to be unfertile. Where fertile eggs are required the birds must have a small pond of some kind.

A duck-pond can be easily made. A large cask, tarred inside and out so as to make it water tight, or an iron cistern, sunk in the ground, can be made to answer the purpose. But ordinarily, where a permanent piece of water is wanted, it will be found the best plan to construct a brick or a cement pond. The first thing to do will be to dig a hole in the earth the required size. The sides should have a gradual slope, so that the birds can walk in and out of the water; a depth of two or three feet in the centre will be ample. The shape of the pond is immaterial, though round is perhaps the most convenient form of any. When the hole is made the proper shape, and the earth thoroughly beaten down, the sides must be lined with bricks, united together with Portland cement. In warm weather it may be advisable to damp the cement once or twice before it finally dries, for if it sets too quickly it will very likely crack. It is of great importance that the bricks and cement should be laid properly, so that when finished the whole may have a smooth surface; otherwise, dirt will gather in the chinks and crevices, rendering it very difficult to ever clean the pond thoroughly.

It is often difficult to arrange about supplying the pond with water. In the neighbourhood of towns, or where there is a constant supply of water through pipes, a piece of india-rubber tubing can be laid on from the nearest tap to the pond; or, where there is a stream of water near, some half-inch leaden pipes can connect the stream and the pond, thus ensuring a constant flow of fresh water. Where neither of these plans is practicable the water must be carried to the pond in buckets. Every now and then it will be needful to empty the pond and to clean it out. In order to be able to empty it a hole should be left in the centre when the bricks are being laid. This should be kept stopped by a tight-fitting wooden plug, covered with flannel; and when it is desired to empty the pond it will only be necessary to pull up the plug and the water will run into the earth beneath. The old pond water will be found an excellent fertiliser for gardens.

The duck's house needs only to be a well-ventilated shed, water-tight, dry, and provided with a few nests for the ducks to lay in. These nests may consist of straw, kept in its place by a couple of bricks. The floor should also be covered with straw, as bedding for the birds.

As a rule, four ducks are quite enough to mate with one drake for breeding purposes, though the number is often much larger, Breeding-pens should be mated together as early as possible after the birds have got over their moult. The drake can be distinguished from the ducks by the curly feather in his tail. In Muscovy ducks, however, this curly feather is absent from the tail of the drake. It is possible to distinguish the drake from the ducks before the feathers are grown by the difference in the voices of the sexes. The voice of the duck is very full, and it quacks in such a way that every one can hear it; the drake has a thin, squeaking, and an almost inaudible voice. The occupants of the breeding-pens should be well housed and liberally fed in order to induce them to lay as early in the year as possible, for early eggs mean early ducklings, and early ducklings bring in the greatest profit. The adult ducks will, if they have a good run, gather a large portion of their own food, but in addition to this they will want, in the winter months, a morning meal of warm, though not hot, food, and an evening meal of hard corn. It is dangerous to add any heating condiments to their food, especially when they are laying, as this causes them to lay shelless eggs, and also injures their egg organs. Nor must they be given too much ordinary food, for they are most voracious eaters, and will consume an almost unlimited amount. If they are allowed to take their fill they will soon become too fat for laying.

Ducks usually lay during the night and early morning; they are most careless layers, dropping their eggs in the water, on the ground, or wherever they may happen to be. In order to prevent the eggs being lost, the birds should be shut up in their house every night, and not allowed out next morning until they have done laying. One little matter worth mentioning is that ducks do not lay their eggs like hens, two days out of three. When they commence laying they produce an egg nearly every day till they have laid from ten to forty eggs; then they rest a few weeks, after which they again commence laying a similar batch.

Hatching should commence as soon as a sitting of eggs has been saved. The hatching and rearing of young ducks for the table can be undertaken by many whose circumstances make it impossible for them to keep stock birds. The ducklings can be hatched out under a hen, they do not require a pond, in fact are better without one, they can be reared in a very small space, and are ready for the table when they are a couple of months old. Ducklings are also very profitable.

The rearing of young ducks for the table is carried on to a large extent in various parts of the country, but the great centre for the trade is the Vale of Aylesbury. There nearly every labourer rears a number of ducklings every year, and many earn the greater part of their incomes by the sale of them. Soon after Michaelmas the breeders start collecting all the eggs they can obtain, and as soon as possible afterwards breeding commences. Duck's eggs are very scarce at the end of the year, and command a high price. As much as a shilling each is sometimes given for them in December. Everyone strives to get their ducks on the market as early as possible, for the earlier in the year the ducks can be sold, the higher is the price obtained for them. The duck-breeders often rear the birds in their own houses, keeping them for the first three weeks in box-like pens around the walls of the living-room. The largest of these breeders will have as many as two thousand birds in their yard at one time, and will rear close on ten thousand in a year. The ducklings are ready for the market when about eight weeks old. It is estimated that the people living round about Aylesbury receive between thirty and forty thousand pounds a year for ducks alone.

Although this trade is carried on chiefly round Aylesbury, there is no reason why people in other parts of the country should not undertake it. Every person who has a little piece of garden ground could, if they pleased, rear a batch or two of ducklings for their own table at a very trifling expense. Duck's eggs require to be sat on for twenty-eight days before they hatch out, and they can be placed under either a duck or a hen. On the whole, a hen is the better mother of the two, as it requires less attention, is more easily handled, and is more reliable. The treatment of the sitting bird is similar to that described in a previous chapter for a hen sitting on fowl's eggs, except that the eggs require to be kept somewhat damper, and if the weather is at all dry they must be occasionally sprinkled with warm water.

For the first few days the ducklings should be fed on hard-boiled eggs, coarse oatmeal or breadcrumbs mixed with milk, groats, a little very finely-cut meat and green stuff, with similar foods. At the end of three or four days, eggs and the other more expensive foods may be discontinued, but meat ought still to be given, as it helps them in their growth. They are not at all particular as to what sort of meat it is; horseflesh, lights, sheeps' paunches, and any refuse, though not tainted, meat may be given. It must be cooked and cut very fine before being thrown to the birds. The aim in rearing ducks for the table is, of course, to secure the greatest possible growth in the least possible time, and to accomplish this aim the birds must be given as much as they can eat three times a day. No food should, however, be left lying about for them to peck at between meals. Their meals should consist for the greater part of soft food such as boiled rice, household scraps, sharps, and barley-meal; for the first few weeks a mixture of boiled rice and sharps makes an excellent diet. Barley-meal should be used more largely during the last week or two. A little flowers of sulphur added to the food greatly helps the ducklings in feathering. A teaspoonful mixed with the morning meal of ten birds three times a week is about the proportion to give. This must be discontinued a fortnight before the birds are killed, otherwise their flesh will have a slightly unpleasant taste.

Ducklings are so hardy that they do not require to be kept with the mother after they are a fortnight old. In some parts of the country it is customary to take them away from the mother when they are only twenty-four hours old, but this is far too early an age. The birds should be kept in a dry shed, and they should never be allowed to go in the water, except, maybe, just for a swim to clean themselves, a day or two before they are killed. It has been proved by practical experiments that ducklings intended for the table grow faster and are less liable to such diseases as cramp if kept out of the water; but if the birds are to be kept for stock ducks they should be allowed to swim after they have grown their feathers, not before. It is possible, by feeding the ducklings in a special way, to give their flesh some desired flavour. Thus, if their food has celery mixed with it their flesh will resemble in flavour that of the Canvas-Back duck.

Treated in the manner here described the birds should be ready for the table when from eight to ten weeks old. They should all be killed before they are ten weeks old, for if they are not, they will start growing fresh feathers, and will lose condition, making it impossible to kill them until some weeks later. The chief useful breeds of ducks are the Aylesbury, Pekin, Rouen, and Cayuga. Besides these there are also various ornamental varieties, too numerous to mention.

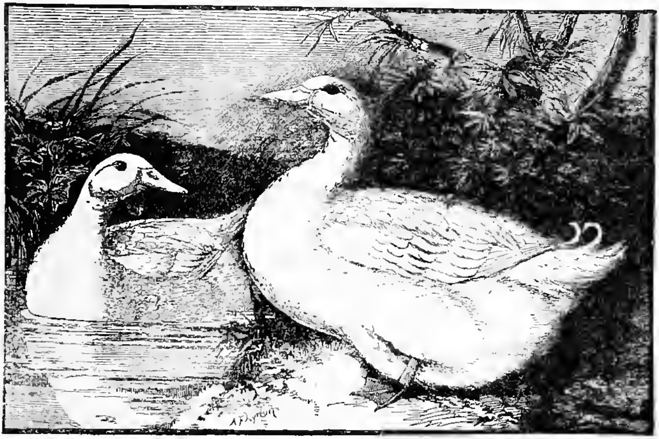

FIG. 46. AYLESBURY DUCKS.

AYLESBURYS.—Aylesbury ducks are named after the great centre of the English duck trade; and even to-day they are not reared anywhere else to such perfection as round about Aylesbury. In appearance the Aylesbury is pure white in plumage, with black eyes, and orange-yellow legs. The bill is naturally of a flesh colour, but it very soon turns yellow if exposed to the sun, and a yellow bill is a fatal disqualification for a show bird. There is a peculiar property in the sand round about Aylesbury that tends to keep the bills of the birds the right colour, and it is this that gives the ducks reared about that town a great advantage over others in the show-pen. Some breeders who live at a distance from Aylesbury even go to the expense of having the grit sent to them from there. One secret of preserving the bills of the birds the right colour is to keep them perfectly clean, to keep their runs clean, and to allow them to be but very little exposed to the rays of a hot sun. It is immaterial whether the bills of breeding-stock become tanned or not; these precautions need only to be taken with those birds which are intended for exhibition. A fair weight for good Aylesbury ducks is, drakes seven pounds, ducks, six pounds. Birds have reached a far greater size than this, however, and some exhibition specimens will weigh over twenty pounds a pair.

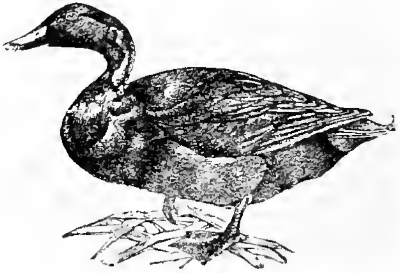
FIG. 47. CAYUGA DRAKE.

The Aylesbury duck is a moderate layer, and is the best table-duck to be had. It grows quickly, and is remarkably hardy. The shells of its eggs are of all tints, from a marbly white to a deep green.

CAYUGAS.—We are indebted to North America for the Cayuga duck, and it is comparatively quite a recent importation. Although not large, its flesh is of a splendid flavour, the best of any of the domestic breeds of ducks and it is a first-class layer. Its plumage is a rich black, its bill dark, and its legs brown. The Cayuga is very little kept as yet, but no doubt its merits will before long cause it to be more largely taken up than it has hitherto been. Good Cayugas weigh, drakes, seven to nine and a-half pounds, ducks, six to eight and a-half pounds.

ROUENS.—The Rouen is, when it has matured, the largest kind of duck we have. Its dark, handsome plumage is almost too well-known to require description. The head and back are a dark rich sheeny green, and there is a white ring round the neck; the breast is a claret colour, the legs dark orange, and the bill a greenish-yellow. Although Rouens are, when mature, the largest of any breed, they take longer to arrive at maturity, and do not grow so rapidly as many others; consequently they are not so good as Aylesburys when it is wanted to rear ducklings for the market, but where large ducks are wanted for the Christmas trade they will answer the purpose excellently. Full-grown Rouens will weigh—drakes, seven to nine pounds; ducks, six to eight pounds. On the whole they must rank below Aylesburys as table-birds, and below Pekins as layers; yet they are a useful, all-round variety.

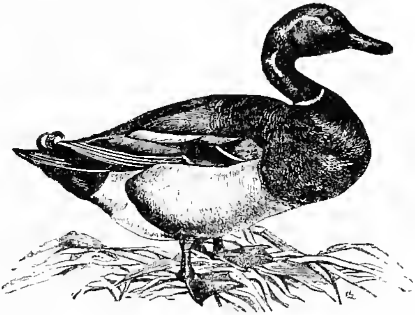

FIG. 48. ROUEN DRAKE.

PEKINS.—Pekin ducks have a creamy white coloured plumage, a deep orange-coloured bill, and dark orange-coloured legs. They can be distinguished from Aylesburys by the creamy tint of their plumage, the colour of their bill, and the difference in shape. Aylesburys are long and flat, while Pekins are very upright; their appearance has been aptly compared with "the idea of an Indian canoe." Pekins were first introduced into this country about eighteen years ago, and they have rapidly become favourites. They are smaller and not quite such good table fowls as Aylesburys, though owing to the looseness of their feathers they appear far larger than they really are. They are probably the best layers of the larger duck, and a pen of eight birds has been known to lay 332 eggs in eight weeks. A fair weight for breeding stock of this variety is seven pounds for drakes and six pounds for ducks, though many birds are smaller than this.

INDIAN RUNNERS.—This composite variety has sprung into much notoriety by reason of its laying powers. As an egg-producer it is without an equal among the larger breeds of ducks; but unfortunately it is small, and not so well suited for marketing purposes. The variety generally seen is the Fawn-and-white, a bird with plumage composed of large patches of fawn and white. As a show variety it has been bred with considerable difficulty, and it is doubtful whether it will ever become really

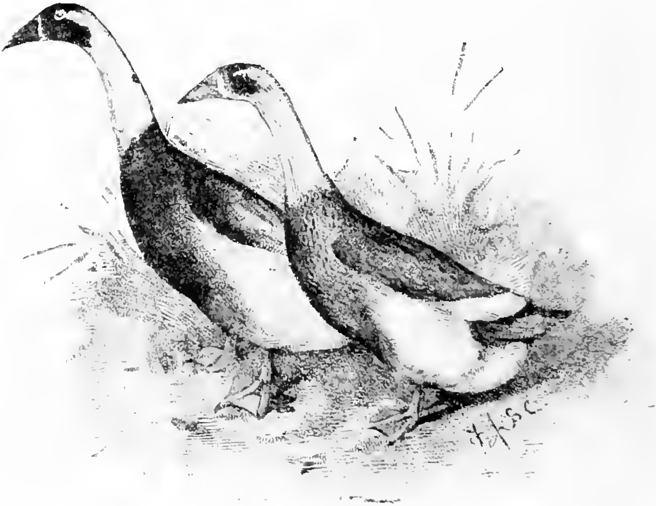

FIG. 49. INDIAN RUNNERS.

popular, unless it is on account of its utility qualities. It is really a prolific layer, and for this reason it is valuable to cross with one of the larger breeds that fail in egg-production. For instance, Aylesbury Runners or Pekin Runners should make birds that lay well when eggs are required, and also come up to the required standard of size for table purposes. Thus it will be seen that the Indian Runner is really more valuable, from an economic point of view, when crossed than when pure.

MUSCOVIES.—A very large breed, believed by some to be most useful for table purposes, though they should be killed when young. In appearance they are patchy, usually black-and-white, with red faces. They are very fair layers, and are well worth the attention of duck-keepers.

CAMPBELLS.—This new variety was introduced some years ago by Mrs. Campbell, Uley, Gloucestershire, who produced it by crosses between Indian Runners, Rouens, and Wild ducks, which latter they very much favour in appearance. They are small, but their egg-producing powers are remarkable. One duck of this breed actually laid 186 eggs in 192 days, a feat which has scarcely been equalled by the best layers in the poultry-yard. They are also prolific producers throughout the winter weather, and do not seem to mind the cold, being very hardy from their youth upward. If they were only larger, they would be amongst our most useful breeds of ducks, for they carry a nice lot of well-flavoured flesh on their small frames. As in the case of the Indian Runners, they are most useful for

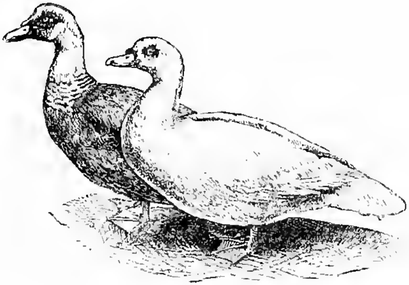

FIG 50. MUSCOVIES.

crossing with larger breeds. Mrs. Campbell bas of late succeeded in producing a strain of Buff or Khaki ducks which promise to become popular. Much difficulty was experienced in perfecting these, as there was little to breed upon but "sports" from the other ducks. However, the colour obtained is now fairly sound, and with a little more breeding they will be fit to put in the show-pen. They show the same laying characteristics as the other Campbell ducks, which is an important point in their favour.

CHAPTER XVIII.

GEESE, TURKEYS, AND GUINEA FOWLS.

GEESE.—WHEREVER there is a field, or a fair quantity of waste land over which they can run, geese can be profitably kept; but where such cannot be obtained it is better to have nothing to do with them. Farmers often object to having geese run over their land on the plea that they foul it, but it is very questionable if they do the land nearly so much harm as is supposed. On the contrary they, in many ways, improve the pasture, and destroy injurious weeds, such as the ergot of rye. They are remarkably hardy, disease rarely ever attacking them, they require but little attention, and they collect a large portion of their own food. Geese thrive better when they have a small pond to swim in, but this is by no means necessary, and many are kept that have no better water supply than a large tub full.

The four leading varieties of geese kept in this country are Toulouse, Embden, Italian, and Chinese. There are also, besides these, several minor varieties, and the common goose. The common goose belongs to no particular breed, and, as a rule, it is an inferior layer, and not over large. Its small size is caused, to a great extent, by the short-sighted policy pursued by many breeders. Year after year they sell their largest birds for the market, because they will fetch the highest price, leaving only poor, small specimens to breed from. This method does not pay. The largest birds should always be saved for breeding stock, if large birds are wanted, for one cannot expect to breed good-sized birds from small stock. The larger a goose is the more in proportion it is worth and it pays well to have first-class stock birds, even though they are somewhat more expensive at the commencement than inferior ones.

The Toulouse goose is noted for its size and table qualities. It is, for a goose, a good layer; an ordinary specimen giving about five and twenty or thirty eggs a year. It grows to an immense size, a pair of birds sometimes weighing as much as sixty-five pounds. The one fault of the Toulouse goose is that, though it quickly acquires a big frame, it takes some time to lay on flesh and to mature. This renders it unsuitable for the early markets, but where birds are wanted for Christmas-time it answers admirably

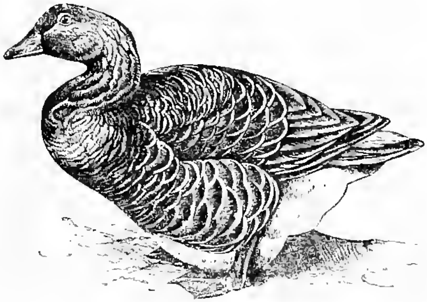

FIG. 51 TOULOUSE GOOSE.

The Embden does not grow to such a size as the Toulouse, but it lays on flesh earlier, and it matures far more rapidly. It is pure white in plumage, and its legs and bill are of a dark orange hue. The Italian goose is quite a new breed in this country, and it promises to be one of the most valuable varieties that we possess. It was first imported into England from Italy in 1880 by Mrs. Christy, and although it is not yet widely known, those who do keep it speak most highly of it. Its strong point is its laying powers, which, when compared with those of other breeds, are simply wonderful. Well-cared birds will average as many as from forty to sixty eggs a year, or even more. Mr. George Payne obtained, from a couple of two-year-old birds a hundred and seventy-four eggs in one season. When this is put alongside the one sitting a year that the common goose gives us, we see what a valuable acquisition the new breed is. The Italian goose is a good forager, active, a non-sitter, and a moderately good table-fowl. Its flesh has a good flavour, and it matures early; but it does not reach so large a size as some kinds. The average weight is about fifteen pounds, though this figure is sometimes greatly exceeded. The Chinese goose is another good layer, and a cross between it and the Toulouse will give very satisfactory results. It somewhat resembles a swan in appearance, and its flesh is superior to the average in flavour.

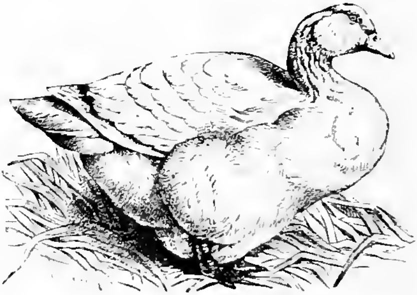

FIG. 52. EMBDEN GOOSE.

In mating-up breeding-pens it is usual to allow three geese to each gander. The pens should be mated-up as soon after moulting-time as possible, and then the geese should be induced, by liberal feeding, to commence to lay early. The stock geese will need a large, dry shed, well bedded with straw, to spend the nights in, and during daytime they must have the run of a field. The eggs can be very well hatched-out by hens of the larger breeds, such as Brahmas and Cochins, but it will not be safe to place more than four or five eggs under each hen. The eggs take thirty days to hatch, and they must be damped at times, the same as has been advised for duck's eggs. When the goslings come out they will not require very much attention, they being very hardy; but they must be liberally supplied with food. Goslings may be fed in a similar manner as has been recommended in the chapter on "Chicken Rearing" for chickens, giving them also a fair allowance of flesh-meat and a good supply of green stuff.

In rearing young geese for the market, they must never be allowed to run short of food. They require a liberal run, and twice a day they must have their fill of corn, meal, potatoes, or turnips. It is not worth while to adopt any of the systems of artificial fattening that are so largely practised by French breeders. For three weeks before the geese are wanted for the table, let them have an extra supply of oats, boiled potatoes, and Indian corn.

TURKEYS.—It is now getting on for four centuries since the turkey first came among us, and it has secured a safe place in all our affections, especially at the Christmas season. In America, its native home, it is rapidly dying out as a wild bird. The great flocks that used to wander about the prairies are rapidly being annihilated by the rifles of sportsmen. The young of the wild turkey are often caught and bred among their tame sisters. They are far superior in stamina to the ordinary domestic bird, and a cross between the two greatly improves the strain. American Bronze toms are often sent to England, very much to the advantage of the flocks they are placed among.

The chief varieties kept in this country are the Norfolk, the Bronze, and the White. The first two are very much on a par in quality, but the White are rather delicate. The plumage of the Norfolk is black, and that of the Cambridge a bronze grey. Breed is, in turkeys, altogether a minor point; the great thing that is required is size, and in purchasing stock it is absolutely necessary to get large birds if success is hoped for. Hen turkeys vary greatly in the number of eggs that they lay. The average number is about twenty or thirty, but sometimes this is greatly exceeded. The eggs require four weeks to hatch-out, and the young chickens are, for the first few weeks of their lives, the most delicate inhabitants of the poultry-yard. They must have constant, unremitting care, or else they will perish. The best way to rear them is to keep them in a dry, covered, sunny run; out of this they must never be allowed to go except on fine, dry days, when they may be allowed to run about in the sun. They must never, on any account, be allowed to run about on damp ground, or to be out in the rain. Wet in any form is simply fatal to them.

They must be fed about every hour, and their food should be of a varied character. For the first four or five days they must be given egg and-milk custards, hard-boiled eggs, breadcrumbs and similar things, together with a plentiful supply of green stuff, such as young onions, dandelions, and young lettuce. After that time a cheaper diet can be given, such as oatmeal, boiled rice, and barley-meal. A little pepper can be mixed with their food.

The two critical periods with turkey chicks are the third day, and the "shooting the red" that takes place when they are between six and eight weeks old. After they have shot the red they rapidly gain strength, and soon, instead of being the weakest, they are the strongest birds in the poultry-yard. They can stand any storms, and will roost out in the open, even during the most severe weather, without injury to themselves.

GUINEA FOWLS.—Guinea fowls have been kept in this country for several hundreds of years, but they have never been popular with poultry-keepers, owing to their wildness, their noise, and their wandering habits. If it were not for these faults they would prove a most valuable addition to our stock of domestic fowls, for they are most prolific layers; they will obtain nearly all their own food, during the summer-time at least; and their flesh is remarkable for its exquisite flavour. They cannot be kept satisfactorily in small yards, or anywhere where they have not room to wander about. Instead of roosting at home at nights, they select the highest branches of the surrounding trees.

In appearance, the Guinea fowl presents a striking contrast to the ordinary inhabitants of the poultry yard. It has a long neck, a long, somewhat cockchafer-shaped body, with tail pointing downwards, rather short, stout legs, and a single comb. The three leading domestic varieties are the white, pied, and speckled; but no strict standard is laid down about the colour of plumage, and birds vary very much indeed. Beginners nearly always find a great difficulty in distinguishing the sex of the birds, for outwardly, the male and female are almost exactly alike. The male, however, has a more brilliant plumage, and its wattles are larger and somewhat differently placed. The exact difference between the head of the male and female can only be learned by close observation. A very simple, and yet certain way, of discovering the sexes of the birds, is by noticing their voices. The female alone utters the call note—"Come *back!* Come *back!*" In weight, the birds rarely reach more than from four to four-and-a-half pounds.

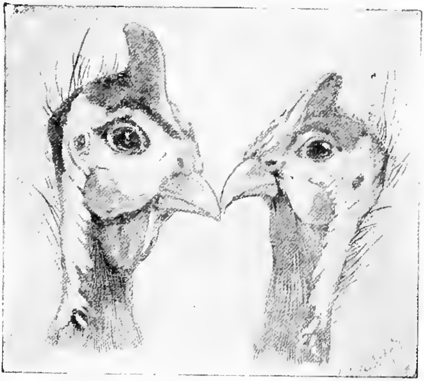

FIG. 53. HEADS OF COCK AND HEN GUINEA FOWL.

A couple of hens may safely be allowed to go with each cock. The hens will not lay in nests provided for them, but make their own nests away in the fields or woods. The only way to get their eggs is to watch them and see where they go. If not disturbed, a hen will lay in the same nest all the season, but if it suspects that anyone has been near it, it will go somewhere else. Hens usually lay about noon, and, as a rule, they lay every day during the season. In collecting their eggs great care must be exercised so that one only goes near the nests when the hens are not about, and half-a-dozen eggs must be permanently left in the nest as nest eggs, and then the bird will not miss the others.

The eggs take about twenty-seven days—sometimes a day or two more—to hatch-out, and as Guinea hens but seldom want to sit, they may be placed under common hens. When the chickens hatch-out they require to be treated much in the same way as turkey chickens. They must be kept quite free from all damp and wet, they must be fed very frequently, at least every hour, and they require a supply of ants' eggs and insects, or, if these cannot be obtained, a fair amount of some sort of meat. Until they grow the horn on their heads they must be very carefully looked after and fed. After that time they are comparatively safe.

CHAPTER XIX.

THE DISEASES OF POULTRY.

"PREVENTION is better than cure," is a motto especially applicable to poultry and their diseases. It is very easy to prevent fowls from becoming unwell; but, once let sickness get among them, it will be found extremely difficult to effect a cure. Unless a bird is very valuable it will usually be found the most economical plan to kill it straight off if the disease gets a good hold of it; for the time spent in doctoring it will be probably worth more than the bird itself, and it is very unlikely that with all the doctoring it will ever be really well again. Of course these remarks do not apply to slight ailments, but to serious complaints.

The most common cause of illness among poultry is damp and draughty houses. Fowls cannot stand wet; their feathers are so made that a shower of rain soaks right into them, instead of running off as it does from the backs of ducks. So if healthy birds are wanted they must be housed in an absolutely water-tight building, and they should have a shelter shed to go under during wet weather. Lack of cleanliness is another prolific cause of disease. It stands to reason that if a bird is infected with vermin, or has to roost in a house reeking with the odour of manure, or is confined in a filthy run, it is almost certain to become ill. These things have been mentioned in previous portions of this book, but they are so important that the reader must pardon me for reverting to them again.

When a fowl is ill it should be taken away from the others, and placed in a small run by itself. This is necessary both to give the bird a chance of getting better, and to prevent the disease spreading through the yard. Poultry are, as a rule, remarkably heartless in the treatment of a sick companion; they peck at it, and ill-treat it in all sorts of ways. As many poultry diseases are very infectious, if one sick bird is allowed to mix with the healthy ones it will often spread the disease through the whole stock.

Wherever it is possible there should be a small covered run kept exclusively for sick fowls, so that immediately a bird shows signs of illness it can be removed from the healthy ones, and placed by itself. Such a run need not be at all large, for as a rule sick birds do not want to wander about much; it should, however, be sunny and dry. In treating any sick poultry the chief things to be observed are to keep them warm, to treat them gently, and to feed them well.

For the commonest complaints, Spratt's Patent have some useful remedies, which, as there are agents in most towns, are easily procurable. They will be found very convenient by those poultry-keepers who do not wish to be troubled with getting made up the special prescriptions recommended here.

APOPLEXY.—This disease almost solely attacks birds that are overfed, and these are most subject to it during hot weather or when they are excited. An attack is usually fatal at once, but where the bird is evidently not dead it should be immediately bled by cutting the vein nearest the bone under one of its wings. A good aperient should also be administered, such as eighteen grains of jalap mixed with three grains of calomel, or a small spoonful of Epsom salts mixed with a wineglassful of warm water. The bird must be kept quiet and fed sparingly on non-stimulating food for some days.

Sometimes signs of an approaching attack can be observed, the bird having a staggering, unsteady gait, similar to that of an intoxicated person. In such a case it should at once be given one of the aperients before-mentioned, and be placed in a cool quiet run by itself. Where one bird is attacked with this complaint, it is needful to see if the whole poultry yard is not being overfed. If so, their diet should be lowered, and they should be given an abundance of green food.

BLACK ROT.—See Comb Diseases.

BUMBLE FOOT.—Dorkings are especially subject to this ailment. It consists, as its name implies, of a gathering at the bottom of the foot. Paint the part affected with lunar caustic, or, if the foot is very bad, apply linseed poultices to it daily until the gathering is ripe, then lance it with a sharp knife, and take out all the matter. The patient should not be allowed to roost on the perch at night, but should be bedded on straw till the foot is quite healed. The poulticing should be continued for a few days after the lancing, and if a little vaseline is applied to the spot it will soothe it.

CHOLERA.—Poultry-yards to-day are plagued with more than one disease that was altogether unknown to our grandfathers, and the most dreaded of these is undoubtedly chicken cholera. It makes its appearance in a yard, often no one knows how, and in a few weeks destroys the greater number of the birds. Preventive measures often seem absolutely useless, and in spite of everything that he can do, the owner sees his best birds carried off, one after another. This disease was for some time only known to us by the reports of the damage it was doing in the yards of breeders in America and on the Continent, but every year it seems to be becoming more and more common among us.

The usual causes of cholera are lack of stamina in the birds, overcrowding, uncleanliness, lack of green food, and absence of shelter from the rays of a hot sun. Drinking stale, tepid water, and eating decayed vegetable matter are also frequently to blame for its origin. There can be no doubt but that it is highly contagious, and one sick bird will pass the disease on to a whole yard.

When a bird is first attacked it loses its appetite, looks thoroughly out of condition, its feathers are ruffled, and its eyes sunken and lacking lustre. What food it does take it seems unable to assimilate, but it eagerly consumes a large amount of water. It has diarrhœa, and at first the excrement is green and slimy, but afterwards it becomes whitish and frothy, and sometimes specks of blood are found in it. The bird becomes more and more sleepy and disinclined for exertion, and at last it sinks down and dies. Occasionally convulsions immediately precede death.

Practically there is no cure for this disease, for it runs its course so rapidly, and affects the intestines so much, that before preventive measures can have time to take effect the bird is dead. The fowl usually dies within thirty-six hours after the symptoms appear, though sometimes it lingers for several days. Post-mortem examinations show the liver to be swollen, congested with dark blood, and in such a state as not to bear handling, the spleen also is swollen, the intestines inflamed, and various other parts of the body affected.

More than one form of this disease attacks domestic poultry. Thus in 1888 a complaint broke out in a poultry-farm near London, where between four and five hundred fowls were kept on a couple of acres of ground. In twelve months about four hundred birds died, in spite of every effort that was made to stamp out the epidemic. During the first two months the number of deaths was over two hundred. Dr. Klein, who carefully investigated the disease, declared that though it bore a superficial resemblance to cholera it was entirely different. The bacilli found in the blood were, he said, longer and of a different kind from those found in cases of chicken cholera. But the two complaints have very much in common, as will be seen by the accompanying description of the symptoms, and they both require the same system of treatment.

" Till twenty-four to thirty-six hours before death the fowls appear perfectly right," wrote Dr. Klein, in *The Field*. "The first indication of the disease is diarrhœa of thin, yellow, frequently fluid, evacuations; the birds are quiet, but are never somnolent, which symptom is so characteristic of fowl cholera. On the next morning, or latest the day following, the animals are found dead. On post-mortem examination the heart contains clotted blood (this is the case already a half to one hour after death), the liver is somewhat enlarged, soft, and brittle; usually the spleen is enlarged to twice its normal size or more, and is soft and flaccid; its substance is more or less dry. The serous covering of the intestines, and particularly the mucous membrane lining the cœcal appendages, is hyperœmic. The cavity of the rectum contains yellow fluid fœcal matter; in the cœcal appendages there is much mucus. . . . Hens are more susceptible to the disease than cocks."

In this case all curative measures were found practically unavailing, and a few months afterwards the owner was obliged to move his stock to fresh ground.

Scientists have traced the cause of the complaint to bacilli present in the blood, and attempts have been made to prevent it by vaccination. M. Pasteur, the celebrated French chemist, has investigated the matter, and he gives the following account of some experiments he made with vaccine matter he had prepared.

*"I take eighty fresh chickens which have never had the cholera either naturally produced or communicated artificially. Twenty of these I inoculate with the poison in a very virulent state—they all die. Of the remaining sixty, I take another twenty and inoculate them with a single puncture, and with the weakest poison I have been able to get—not one of them dies. Are they, then, proof against the virulent poison? Only a certain number of them are so. As a matter of fact, if I inoculate these twenty with the very virulent poison, about eight or ten of them, though they become ill, do not die; far different to the other twenty fresh ones, every one of which dies.

"Again I take another twenty from the original lot and vaccinate them with two punctures, the second made seven or eight days after the first. Does this vaccination make them proof against the virulent poison? To try, I inoculate them with it. This time, in distinction to the second experiment, under which six or eight

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* Quoted by Professor Woodroffe Hill in "Diseases of Poultry."

recovered, twelve or fifteen live. Lastly, if I take the remaining twenty and inoculate them with the reduced poison, not once but three or four times, though afterwards inoculated with the virulent poison, not one will die. In this later case the birds are brought to a state of inaptitude to take chicken cholera."

But at present the disease is not common enough in this country for vaccination to be generally practised, and the chief means we must rely upon for fighting it are preventive measures. If fowls are kept on fresh ground, are not overcrowded, and are properly cared for, there is not much fear of their being attacked. Should a bird become ill, strict repressive measures must at once be taken. Every fowl in the slightest degree affected must immediately be put right away from the others. The water which the healthy birds drink should have a small piece of camphor placed in it. All the excrement must be gathered up, and the house and run have quicklime, or some other good disinfectant scattered over them. The inside of the house should be cleaned with special care, and the walls and various appliances washed with fresh lime-water in which is mixed carbolic or sulphuric acid or some similar compound.

Whatever is done towards attempting to cure the sick birds must be done on the first appearance of the disease, for in a few hours it makes such progress as to render successful treatment impossible. The following American recipe, given in the American *Poultry World* is taken from a treatise on the subject by Dr. Dickie: "Fowls that are too sick to eat should have every four or five hours a pill made as follows:—

Blue mass	60 grains
Pulverised camphor	25 grains
Cayenne pepper	30 grains
Pulverised rhubarb	48 grains
Laudanum	60 drops

"Mix and make into twenty pills. When they have had time to act, give half a teaspoonful of castor oil and ten drops of laudanum to each. Let them drink scalded sour milk, with a gill of Douglas Mixture for every twenty-five head a day. This treatment ought to change the character of the evacuations and make them darker and more solid. When this happens and not before give them alum water or strong white-oak bark tea to drink, and no other drink. This will tend to check the discharges."

But the best remedy is what an American paper calls "the hatchet cure," *i.e.*, chopping off the head of the sick bird. Great care must be taken not to spread the complaint by going immediately from the sick fowl among the healthy stock, or by carrying anything from the one to the other. When the bird dies its body must be placed where none of the others can ever get near it; the best thing to do with it is to burn it.

COMB DISEASES.—There are two forms of comb disease, one of which, Black Rot, commonly attacks Spanish; while the other, White Comb, is most frequently found among Cochins. In Black Rot the comb of the bird turns a black colour, the fowl becomes weak, it gradually pines away, and at last dies. The complaint is caused by derangement of the liver. For treatment, give the bird a dose of Epsom salts, and feed it chiefly on soft food. It must have plenty of green stuff, especially common dandelion.

White Comb may be detected by small white spots coming on the comb; these gradually extend down the neck, causing the feathers to come off. The bird may be treated the same as for Black Rot. A very old and efficient mixture for outward application on the parts attacked is made of two parts—by weight—of turmeric, combined with one part of cocoa-nut oil.

CRAMP.—Cramp is brought on by exposure to the wet, and it can be prevented by giving the fowls better shelter. When the birds are attacked the simplest remedy is to rub their legs with liniment, and to make their food a little more stimulating. In severe cases, the fowls should be bedded on straw or peat moss, and not allowed to roost.

Chickens are very subject to cramp, especially during the cold, wet spring months. Sometimes this is caused by the wet, and sometimes also by the chickens having to run over a hard wooden or stone floor. This seems to prevent the blood flowing freely through their legs, and so brings on the cramp. If the boards or stones are covered with a layer of straw, peat moss, fine earth, or any loose substance, the chickens can then run over them without taking any harm. When chickens are attacked with cramp, treat them much the same as adult fowls. Keep them in a dry, covered run, rub their legs with a little liniment, and mix a small quantity of Spratt's "Cardiac," or of some similar compound, with their food. If any chicken is very bad, it will be found advisable to bring it into the house, and to place it in a basket lined with flannel in front of the fire for a day or two. When it is better care must be taken not to expose it to the cold air too suddenly.

CROP-BOUND.—It is no uncommon thing for the crops of fowls to become so full of food or of some other substance that they cannot assimilate it. The consequence is that the fowl is unable to swallow anything, and naturally it pines away. The causes of crop-binding are various. Frequently the fowl swallows some foreign substance, such as a piece of bacon rind, a lump of matted grass, or some similar article. It manages to get this as far as its crop, but there the thing sticks, and refuses to go any farther, blocking up the passage to the stomach, and finally preventing the bird from swallowing anything else. Again, a fowl will at times gorge itself with a quantity of dry food, until its crop becomes unduly distended. Then the bird goes and has a drink; this causes the food to swell, the crop becomes yet more distended, and loses its power of elasticity. In order to cure the bird, its crop must be emptied. To do this, first pour a little warm water down its throat, and gently knead the crop with the hand for a few minutes. Leave the bird for about an hour, and then repeat the operation, this time pouring a little salad-oil down its throat. If this does not do any good take the bird between the knees, with its head downwards, and try to force the food in the crop out into the mouth by pressing the crop downwards.

If all these measures fail to have any effect after they have been repeatedly tried, it will be necessary, as a last resort, to cut the crop open and empty it. This should only be done in very extreme cases, when everything else has failed.

There should be two persons to perform the operation, the operator and his assistant. Let the assistant take the bird in his lap, and keep it quite still by holding the base of the two wings with one hand, and the legs with the other. The operator will require a very sharp knife, a small article such as the back of a spoon with which to empty the crop, and some thread for sewing it up. All the instruments, and also the hands of the operator, must be dipped in diluted Jeyes' Perfect Purifier, or carbolic lotion. First make a straight cut in the upper part of the crop, about an inch in length, and then take out all the contents of the crop through it. Wash the crop, and sew it up again. The thread used for the sowing should be either horsehair or catgut, not any vegetable substance, and the two skins must not be sewn together. After the operation the bird should be fed very sparingly on soft food only, and for the first day it should not have any water. It must not be allowed to have any whole grain for at least a week afterwards.

DIARRHŒA.—Diarrhœa is a complaint that many breeders do not take any notice of, but it is very weakening, and when signs of it appear the matter ought to be attended to. The simplest medicine is powdered chalk. A dose of about twenty grains of compound chalk powder morning and night, for a couple or three days, ought to effect a cure. If it is preferred, the chalk may be mixed with the bird's food. It ought to be fed on boiled rice, milk, and other non-stimulating foods. If the chalk does not do any good, and the diarrhœa increases in severity, a dose or two of Browne's Chlorodyne should be given.

EGG-BOUND.—Hens sometimes produce such large eggs that they are unable to pass them. When this is the case, the bird goes more than once to the nest, and sits there some time. When it comes off, it walks about with a mopish air. If it is suspected that a hen is egg-bound, it should be very quietly caught, and felt about the vent. If it is egg-bound, the person handling it will be able to feel a hard substance (the egg) there. The best remedy is to apply some olive oil up the vent, either by means of a syringe or an oiled feather. Birds inclined to be egg-bound should not be fed on stimulating or fattening foods, such as maize. Egg-binding is frequently due to these causes.

EGG-EATING.—This vice is frequently caused by lack of shell-forming material. In their craving for it, the hens eat their egg-shells to obtain some, and they soon acquire a liking for the eggs themselves. One hen quickly teaches the others, and in a short time the habit will spread among all the birds in the yard. They soon become so expert that they cause every egg to disappear as soon as it is laid, without leaving a trace of it remaining. Frequently, while a poultry-keeper cannot understand why his hens do not give him any eggs, the fowls are all the time laying well, but they clear up their eggs so quickly that he never obtains a sight of them.

Birds in confined runs, where they have no chance of picking up worms or other insects, are the chief offenders, and this fact suggests a probable cause and cure.

In attempting to cure egg-eating hens, the first thing to do is to give them a liberal supply of shell-forming material. This alone will sometimes stop them. If not, a number of eggs should be emptied of their contents, and filled with mustard; if these are laid about their nests the birds will attempt to eat them, under the impression that they are genuine eggs. The taste of the hot mustard will teach them a lesson, and after a few such attempts hardly a hen will touch an egg again. If a number of rotten eggs are left about the house, they effect a cure in the same way, viz., by causing the hens to become so disgusted with the taste of eggs that they refuse to touch any more of them.

Egg-eater's nests will often be found useful. These are so arranged as to cause the eggs to roll out of reach of the hens as soon as they are laid. Their chief drawback is that the hens often refuse to lay in them. There are several special makes on the market.

ELEPHANTIASIS.—See Scaly Legs.

FEATHER-EATING.—This habit is one to which the lighter breeds are more addicted than the heavier, and unfortunately the example is contagious. If one bird commences it, the others soon follow suit. There are many different causes of it. Sometimes it is excess of animal food, sometimes lack of it; sometimes over-feeding, sometimes thirst. To cure the birds, the first thing to be done is to give them a complete change of diet, letting them have an abundance of green food. The bird that has its feathers picked should have those parts of its body that are attacked washed every day with Jeyes' Perfect Purifier, or some similar non-poisonous compound.

As it is highly probable that lack of occupation at least helps to make poultry feather-eaters, it will be well to try and find them some occupation. If their house is thickly strewn with straw or peat-moss litter, and a handful of corn is every now and then thrown among it, the fowls will employ themselves in scratching for the grain; their green food can also be tied up a little way, so that they will have to jump up every time they want to get at it.

GAPES.—This disease is chiefly confined to chickens, and is due to the presence of small worms in the throat. These obstruct the air-passage, so that the bird has continually to open its mouth and gape in the effort to breathe, hence the name of the disease.

There are numerous methods of treating gapes. One common way is to take a feather, strip all the down off it, except a little at the point, dip this point in turpentine, place it down the throat of the chicken, and after giving it a twist or two round to pull it out. The worms are often thus extracted from the throat with the feather. This plan, however, requires care, or else the chicken may be choked. In very mild cases it may be sufficient to place a little camphor or a small quantity of turpentine in the drinking-water. Another, and a very effective cure, is to cause the chickens to inhale the fumes of carbolic acid. When the acid is heated it gives off a quantity of fumes. Hold the head of the bird among the fumes so that it inhales them, taking care at the same time that they are not sufficiently dense to suffocate it. This will very likely require repeating two or three times in order to thoroughly destroy the gape-worms. It is well to dust the chicken-house and run with fresh lime after a case of gapes has appeared there.

LEG WEAKNESS.—This complaint is usually found among young cocks of the heavier breeds, and it is caused either by wrong feeding, too rapid growth, or breeding from weakly parents. Give the sick bird some bone-meal in its food, add a little tonic to its drinking-water, and let it have a plentiful supply of lime, old mortar, and crushed oyster shells.

LIVER DISEASE.—It is largely caused by in-breeding, and over-stimulation. Never breed from birds that are in the slightest degree affected with it. Mild cases may sometimes be cured by an abundance of green food and careful dieting, but where the disease has got well hold of the system the best thing to do is to kill the bird.

MOULTING.—Strictly speaking, moulting is not a disease at all, but as during the time it is taking place the birds are below par, and require extra attention, it will be advisable to treat it here. It occurs every autumn, when the fowls throw off their old feathers, and new ones grow in their place. As a rule, the older the bird is, the later in the year its moult takes place. The earlier in the season poultry can get their moult over, the better it is for them, and the more chance there is of their commencing to lay during the winter. The two chief points to be attended to during moulting-time are to keep the birds warm and dry, and to feed them more liberally than usual. They should have a good supply of flesh-meat, and a little of some spicy condiment may occasionally be given to them. If the new feathers do not come easily, a small quantity of flowers of sulphur—say a spoonful for half-a-dozen fowls—given two or three times a week, will help them along; a tonic will also do the birds good at this time. The old henwives' plan of putting a rusty iron nail in the drinking water is not at all a bad one. Those who want a more elaborate preparation can use Parrish's Chemical Food, or the well-known Douglas Mixture. The former is obtainable from any chemist, while the latter is made as follows: Take one ounce of diluted sulphuric acid and half a pound of sulphate of iron, dissolve them together, and add two gallons of spring water. The mixture to be added to the drinking-water, in the proportion of one teaspoonful to every pint of water.

PALE YOLKS.—The eggs of some breeds are naturally of a paler colour than those of others, but sometimes eggs have an unnatural paleness that is preventable. This paleness is generally found in the eggs of birds that are kept in confined runs, and it is an indication that the hens are below par. The most common cause is a lack of green stuff, and the cure lies in giving the hens an abundance of that article.

RHEUMATISM.—Rheumatism should be treated in the same manner as cramp. It strongly resembles that disease in outward symptoms, except that it is sometimes accompanied by swelling of the joints, and cramp is not.

ROUP.—Roup causes more deaths in English poultry-yards than any other disease. The first of its appearance is a simple cold. The bird coughs and sneezes, its eyes are red, its plumage is somewhat ruffled, and there is a watery discharge from its nostrils. At this stage the disease can usually be easily cured; but if it is neglected the symptoms soon become more serious. The discharge acquires an offensive smell, and at the same time hardens and gathers about the nostrils and throat of the bird; the head swells, often to such a degree as to close the eyes, the fowl refuses all food, and mopes continually. Frequently there is a rattling in the throat, and unless preventive measures are soon taken the invalid dies.

As roup is highly contagious it is necessary to remove a fowl right away from all the other stock as soon as it shows the least sign of it. If this is not done, the healthy birds are almost certain to become affected. The invalid should be removed to a dry, warm shed, and be given plenty of nourishing food, to which some pepper has been added. If it refuses to eat, as it probably will, some meal must be made into little rolls, each slightly smaller than a woman's little finger, and these should be forced down its throat, two or three times a day. Too much food must not be given this way, however, or else it will do more harm than good. It is well to remember that a sick bird cannot digest so much as a healthy one, and if too much food is forced into its crop it will weaken it rather than add to its strength.

In the first stages of the disease the best remedy undoubtedly is homœopathic tincture of aconite. The dose is one pilule or one drop of the tincture two or three times a day. If the face is swollen it must be washed with warm water, in which is mixed a little of Jeyes' Perfect Purifier. It is necessary to be careful to dry the face properly after it has been washed, or else the bird will catch more cold. Some medicine will also be required. A slight aperient should first be given to lessen the feverishness which is always present in roup; a little jalap, or half a teaspoonful of Epsom salts dissolved in warm water will be sufficient. A small piece of camphor should be placed in the water that the bird drinks, and also in the water of the healthy stock; with the latter it acts as a preventive. There are innumerable special roup medicines on the market, some of which are very good and others simply useless. Unless the breeder knows of some thoroughly effective medicine, prepared by a reliable vendor of poultry medicines, he had better have one of the recipes given below compounded, and use it. Most of the best medicines for roup contain oil of copaiba and cayenne pepper; these have been found to be among the most effective drugs for curing roupy poultry. The following is a recipe that has been largely used, and is of great value:

Balsam of copaiba . .	1 ounce
Powdered liquorice .	½ ounce
Piperine . . .	1 drachm

Mix together, add about ½ ounce of magnesia, and make the whole into sixty pills.

Mr. Vale's Roup Pills are well known, and probably have a larger sale than any others in the country. That gentleman, instead of keeping his formula a secret, has published it, so that anyone can make the pills themselves:

Sulphate of copper	½ grain
Cayenne pepper in powder . . .	1 grain
Hydrastine	⅓ grain
Oil of copaiba	3 drops

The whole to be mixed together with 3 or 4 grains of calcined magnesia and a couple of drops of Venetian turpentine.

Besides attending to the sick bird, it will be necessary to take precautionary measures among the healthy stock to prevent the disease from spreading. It has already been recommended to place a little camphor in their drinking-water. In addition to this their food must be made slightly stimulating, and their house should be examined in order to discover if it is at all draughty or damp; if it is, those faults should be remedied.

SCALY LEGS.—Birds whose legs become scaly must be kept in dry runs. Every morning their legs should be washed in hot water, using a hard brush and plenty of soap, and taking care to scrub them well. After the legs are dried, rub them over with sulphur ointment, or with the following preparation given by Mr. Alfred Hemsley in "Fowls."

Lard	2 ounces
Arsenic	10 grains
Sulphur	2 drachms
Glycerine	½ ounce
Spirits of camphor	2 drachms

SOFT-SHELLED EGGS.—Soft-shelled eggs are usually caused by the hens not having sufficient materials out of which to make their shells. This should be remedied by giving them a plentiful supply of grit, kitchen ashes, old mortar, and broken oyster shells. Sometimes the complaint is brought on by other causes than lack of shell-forming materials. Over-stimulation, the too rapid production of eggs, and inflammation of the egg organs will cause it In such a case the hen should be kept quiet, giving it a change of diet, and not letting it have anything in the slightest degree stimulating. A week or two of rest from laying will go a long way towards making the fowl well.

WHITE COMB.—See Comb Diseases.

THE END.

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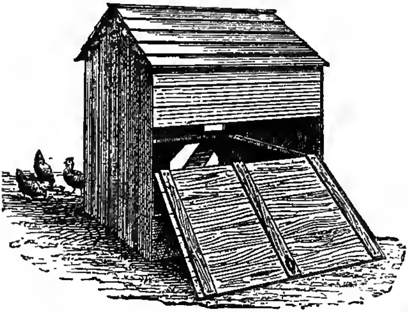

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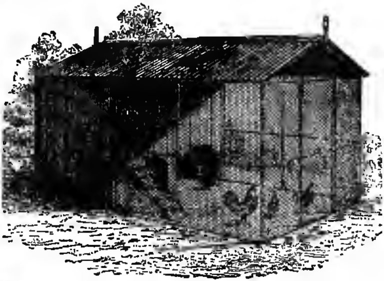

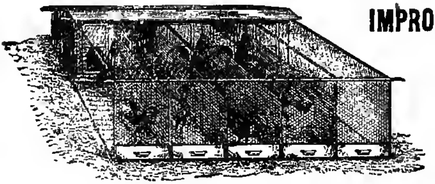

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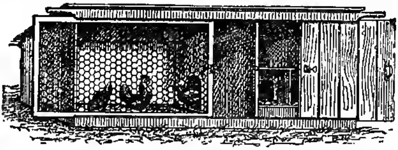

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INDEX.

Account Books, 3
Albions, 61
American Breeds, 80
Anconas, 71
Andalusians, 70
Apoplexy, 121
Artificial Incubation, 35
Aseel, 79
Asiatic Breeds, 72
Aylesbury Ducks, 109
Bantams, Booted, 93
  Brahma, 93
  Game, 90
  General Observations on, 89
  Japanese, 93
  Pekin, 92
  Rosecomb, 91
  Sebright, 91
  Silkies, 94
Black Rot, 122
Booted Bantams, 93
Brackels, 66
Brahma Bantams, 93
Brahmas, 74
Breeding, 44
Breeds, American, 80
  Asiatic, 72
  British, 48
  French, 62
  Mediterranean, 68
  Selection of, 12
  Spanish, 68
British Breeds, 48
Bumble Foot, 122
Campbell Ducks, 113
Cayuga Ducks, 110
Chicken Coops, 31
Chicken Rearing, 30
Chinese Geese, 116
Cholera, 122
Cleanliness, 4
Cochins, 72
Comb Diseases, 126
Coops, Chicken, 31
Cramp, 126
Crêve-cœurs, 65
Crop Bound, 127
Diarrhœa, 128
Diseases of Poultry, 120
  Apoplexy, 121
  Black Rot, 122
  Bumble Foot, 122
  Cholera, 122
  Comb Diseases, 126
  Cramp, 126
  Crop Bound, 127
  Diarrhœa, 128
  Egg Bound, 128
  Egg Eating, 129
  Elephantiasis, 129
  Feather Eating, 129
  Gapes, 130
  Leg Weakness, 130
  Liver Disease, 131
  Moulting, 131
  Pale Yolks, 131
  Rheumatism, 132
  Roup, 132
  Scaly Legs, 134
  Soft-shelled Eggs, 134
  White Comb, 134
Dominiques, 80
Dorkings, 48
Ducks, Aylesbury, 109
  Campbell, 113
  Cayuga, 110

Ducks, General Observations on, 104
    Indian Runner, 112
    Muscovy, 113
    Pekin, 111
    Rouen, 111
Egg Bound, 128
    Eating, 129
    Protector, 26
Eggs and Hatching, 22
Elephantiasis, 129
Embden Geese, 115
Farming Poultry, 95
Fattening Table Poultry, 103
Faverolles, 65
Feather Eating, 129
Feeding of Poultry, 16
Fertility of Eggs, Testing, 28
French Breeds, 62
Game Bantams, 90
    Fowl, British, 50
    Indian, 79
    Old English, 53
Gapes, 130
Geese, 114
    Chinese, 116
    Embden, 115
    Toulouse, 115
Guinea Fowl, 118
Hamburghs, 54
Hatching and Eggs, 22
Hearson's Incubator, 39
Houdans, 63
Houses and Runs, 5
Incubation, Artificial, 35
Incubator, Hearson's, 39
    Tamlin's, 41
    Wilson-Wilson's, 40
Indian Game, 79
Indian Runner Ducks, 112
Introduction, 1
Japanese Bantams, 93
Javas, 87
Killing Table Poultry, 104
Langshans, 76
La Flèche, 63
Leghorns, 83
Leg Weakness, 130
Lincolnshire Buffs, 61
Liver Disease, 131
Malays, 78
Mediterranean Breeds, 68
Minorcas, 69
Moulting, 131
Muscovy Ducks, 113
Old English Game, 53
Orpingtons, 57
Pale Yolks, 131
Pekin Ducks, 111
    Bantams, 92
Plymouth Rocks, 80
Poultry Farming, 95
    Feeding of, 16
    Table, 102
Protector, Egg, 26
Rearing Chickens, 30
Redcaps, 56
Rheumatism, 132
Rosecomb Bantams, 91
Rouen Ducks, 111
Roup, 132
Runs and Houses, 5
Scaly Legs, 134
Scotch Greys, 56
Sebright Bantams, 91
Selection of Breed, 12
Silkies, 94
Soft-shelled Eggs, 134
Spanish Breeds, 68
Spanish, White-faced Black, 68
Table Poultry, 102
    To Fatten, 103
    To Kill, 104
Tamlin's Incubator, 41
Testing Fertility of Eggs, 28
Toulouse Geese, 115
Turkeys, 117
    Norfolk, 117
White Comb, 134
White-faced Black Spanish, 68
Wilson-Wilson's Incubator, 40
Wyandottes, 85